APPENDIX F4.2

Hydrology Documentation

Attachment F06-4a

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 1 SUMMARY REPORT

Identifying Public Works' Current Sediment Management Practices, Issues, and Deficiencies

June 2005

Sediment Management Strategic Plan – Strategy 1 Report
County of Los Angeles Department of Public Works

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STRATEGY 1 REPORT – EXECUTIVE SUMMARY

Introduction

Sediment management has become a critical issue at Public Works because (1) we are reaching capacity limits at some of our Sediment Placement Sites (SPS); (2) the number of debris retention facilities continues to increase, especially in the Santa Clarita area; (3) cities have objected to using their streets as haul routes; (4) Road Maintenance Division has an increasing need for disposal sites for sediment removal from mountain roads; and (5) environmental regulations regarding sediment disposal are becoming increasingly restrictive. As a result of these issues, a sediment management plan consisting of four strategies is being developed. This report summarizes the findings and recommendations resulting from the work performed under Strategy 1.

Background

In October 2003, Flood Maintenance and Water Resources Divisions were given the MAPP goal of developing a strategy and action plan to address Public Works' sediment management responsibilities at all County roads and for all reservoirs, debris basins, sediment retaining inlets, and SPSs to maintain flood control protection and access for the residents of the Los Angeles County Flood Control District (LACFCD). Administration approved developing a sediment management strategic plan with oversight from the Steering Committee in order to implement its four strategies:

- Strategy 1: Identifies Public Works' current sediment management practices, issues, and deficiencies.

- Strategy 2: Identifies Public Works' projected sediment management needs, including anticipated future development within the LACFCD for the next 20 years and recommends new policies and practices.

- Strategy 3: Examines alternatives to meet Public Works' sediment management needs for the next 20 years.

- Strategy 4: Develops a sediment management strategic plan to meet Public Works' sediment management needs for the next 20 years.

This report summarizes the findings and recommendations from Strategy 1.

Strategy 1 objectives are to:

- Develop an inventory of Public Works' current sediment management facilities and identify deficient facilities not meeting our current needs. Conduct periodic evaluations and update the sediment management matrix.

- Investigate and include any recommendations to enhance or streamline Public Works' current sediment management policies and practices (i.e. building codes and regulating requirements, environmental constraints, issues with communities, and issues preventing/hindering the use of sediment management facilities).

The objectives of Strategy 1 are to develop an inventory of Public Works' current sediment management facilities, identify deficient facilities not meeting our current needs, and make recommendations to enhance Public Works' current sediment management policies and practices. These objectives were accomplished through three action steps. First (Action Step 1.1), a matrix was created summarizing current sediment management facilities within the LACFCD. Next (Action Step 1.2), current sediment management policies and practices were reviewed. Lastly (Action Step 1.3), sediment management issues, needs, and deficiencies for the next 20 years were identified based on the current level of development.

Action Step 1.1 revealed the following: Public Works owns over 300 flood control facilities that serve a debris control function. These facilities have an estimated 75 million cubic yards of sediment in storage and collect an estimated 2 million cubic yards of sediment annually. Public Works has 29 SPSs to serve these facilities, 22 of which are active and have approximately 59 million cubic yards of available capacity. Public Works also deposits flood control facility debris at seven landfills and/or dump sites owned by other entities. Public Works maintains numerous road culverts and 30 temporary road sediment storage sites. A total of 12 landfills are available in Los Angeles County for sediment disposal. However, use of these landfills is subject to dumping fees.

Key Recommendations

Following are the priority recommendations for the Workgroup to implement resulting from the findings of Action Steps 1.2 and 1.3:

1. In coordination with Land Development Division, develop a policy requiring new development projects with sediment retention facilities in Sediment Management Area IV (Santa Clara River Watershed) to pay fees towards the construction of regional SPSs.

2. Under Action Step 3.2, for Sediment Management Areas I through IV, evaluate alternatives for disposing of sediment from Public Works' reservoirs, debris basins, and debris retaining inlet (DRI) facilities over the next 20 years. These alternatives will include:

   a. Continue further evaluations and negotiations with Holliday Rock in Upland, United Rock in Irwindale, the City of Irwindale, and Vulcan Materials Company in Sunland on trucking our excavated sediment to their quarries and abandoned gravel pits for grading and pit reclamation purposes.

b. Develop an implementation plan for using Sheldon Pit and Strathern Pit, which require sediment for fill purposes and will be acquired by Public Works as part of the Sun Valley Project.

c. Evaluate the cost and feasibility of establishing new regional SPS facilities in the Santa Clara River region (Sediment Management Area IV) by preparing environmental documents, securing permits, and acquiring rights of way (including abandoned gravel pits).

3. Under Action Step 4.3, coordinate with Public Works' Public Relations Group to develop an outreach program to address the current issues of community opposition at various SPSs in Sediment Management Areas I, II, and III (Santa Monica Mountains, San Gabriel Mountains, and Santa Susana Mountains, respectively).

4. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) the preparation of ultimate fill plans for the 10 SPSs that do not have them.

Sediment Management Strategic Plan – Strategy 1 Report

1.0 Action Step 1: Sediment Management Matrix

Appendix A presents a matrix summarizing the status of Public Works' sediment management facilities, including their capacities, historic sediment production rates, and permit issues.

Public Works' debris control facilities include 14 reservoirs, 118 debris basins, and 173 debris retaining inlets. These facilities have an estimated 37 million cubic yards of sediment in storage and collect an estimated 2 million cubic yards of sediment annually. To serve these facilities, Public Works has 29 SPSs. Fourteen SPSs are active and available for use, and appear to have sufficient capacity to handle their contributory facilities for the next 20 years (total estimated available capacity of 53 million cubic yards). Seven are active and available for use, but have less than 20 years of capacity (total estimated available capacity of 230,000 cubic yards). Use of 10 of the 22 active facilities has been subject to complaints and opposition from the local community. An additional seven SPSs require extensive environmental documentation and permits before they can be used or continue to be used (total potential capacity of 5 million cubic yards). Four SPSs have reached or are nearing capacity. Eight other Public Works' SPSs have been retired and put to different use. Public Works also has agreements and/or with various entities to deposit sediment at seven additional landfills and/or dump sites.

Public Works also maintains numerous road culverts and has 30 temporary storage sites for sediment from road facilities. The capacities of the storage sites have not been quantified.

There are approximately 17 landfills in the County of Los Angeles (five unclassified, 12 Class III). Three landfills are limited to use by local municipalities only. Of the remaining facilities that are available but subject to dumping fees, the unclassified landfills have a total remaining capacity of 54.6 million tons (roughly equivalent to 36 million cubic yards of sediment), and the Class III landfills have a total estimated remaining capacity of 68.8 million tons (roughly equivalent to 46 million cubic yards of sediment).

2.0 Action Step 2: Current Policies and Practices

This step presents the current policies and practices of various Divisions with respect to SPSs. Where applicable, recommendations regarding changes to the current Public Works policies and practices are included.

1. Building (and Grading) Code Exemption for SPS Facilities

   Los Angeles County's Building Code is contained in Title 26 of the Los Angeles County Code. The following is an excerpt from the Code pertinent to the operations of our SPSs:

   > "101.3 Scope. The provisions of this Code shall apply to the construction, alteration, moving, demolition, repair, use of any building or structure and grading within the unincorporated territory of the County of Los Angeles and to such work or use by the County of Los Angeles in any incorporated city not exercising jurisdiction over such work or use.
   >
   > The provisions of this code shall not apply to…certain governmental agencies, special districts, and public utilities as determined by the building official…[and] hydraulic flood control structures..."

   SPSs are owned and operated by the Los Angeles County Flood Control District, which is administered by Public Works.

   The County Building Code requires 90 percent compaction for fill material. However, County Flood Control District SPSs are exempt from the provisions of the County Building Code. The fill in SPSs consists of buttress fill and unclassified fill. Compaction in SPSs is to 90 percent for buttress fill, and no compaction requirement is specified for unclassified fill. Compaction tests are performed for contract operations in SPSs but are not performed during Flood Maintenance Division's sediment placement operations. Compaction and testing of fills in a SPS would add significantly to the cost of the operation. Compaction of all SPS fill material to 90 percent is justified only if a higher end-use of the SPS area (e.g. for habitable structures) is anticipated. If active SPS mining operations are employed in the future, the issue of compaction becomes less critical.

   The end-use of all future SPS facilities should be considered when determining the grading requirements for each facility.

2. Cities' Approval of Haul Routes and Fill Plans for SPSs

   County Counsel indicated during recent reservoir cleanout projects that hauling permits may not be required if the haul trucks are within the public streets' established weight limits. However, for SPSs and attendant haul routes located in incorporated areas, it is recommended we maintain the current policy of coordinating the haul routes with the Cities prior to initiating the hauling work.

3. Policy for County Regional Planning Conditional Use Permits (CUP) for SPSs

In its administration of compliance with Los Angeles County's Building Code, Public Works' Building and Safety Division refers large grading jobs (over 100,000 cubic yards of sediment) to the County of Los Angeles Department of Regional Planning to determine if a CUP from that agency is required. Regional Planning's Conditional Use Permit procedure requires review and comments by other entities (County of Los Angeles Health Department, County of Los Angeles Fire Department, Cities, etc.) and approval by the Regional Planning Commission or its Hearing Officer after conducting a public hearing. Since the existing SPSs are flood control district facilities and thus exempt from the County Building Code, a CUP from Regional Planning is not required for these facilities.

4. Policy on Inspecting Operations at SPSs

Construction Division (CON) currently inspects compaction work for contract placement of sediment at SPSs. Flood Maintenance Division's (FMD) superintendents and foremen oversee sediment placement operations at the SPSs' utilizing force account. The Workgroup will, in Action Step 3.2, coordinate with CON and FMD to develop a policy and standards for inspecting all sediment placement operations at the SPSs.

5. Policy on Removing Material from SPSs

Historically, several SPSs have been utilized for construction fill material. Over 1,000,000 cubic yards of material were removed from Dalton and San Dimas SPSs after 1995. Similar SPS mining operations have been implemented in the West Area facilities.

No permits or environmental documentation for the California Environmental Quality Act (CEQA) are required for minor sediment removal projects (less than 10,000 cubic yards) at Public Works' SPSs as this is an established maintenance practice and minor alterations to the SPS.

For larger sediment removal projects, CEQA documentation, permits, and approvals from the city in which the SPS is located may be required. Even in the absence of legal requirements to obtain city approvals, city concurrence should be obtained.

6. Policy for Administering Major Sediment Cleanouts

For major sediment cleanout operations at reservoirs and large debris basins, Water Resources Division (WRD) or Design Division prepares the cut plans for the reservoir/basin and fill plans for the SPSs. Selection of the SPS to be used for sediment disposal is a cooperative effort between WRD and FMD. Public Works contacts the affected cities to coordinate the cleanout operation and obtain concurrence on haul routes. In most cases, Public Works distributes literature to the property owners along the haul routes to keep them informed. Depending on its workload, FMD would recommend to Administration whether to perform these major sediment cleanout operations by force account or contract. In force account sediment cleanout operations, work is performed in accordance with the plans with oversight by FMD's superintendents, foremen, and office engineers. For contract cleanouts, the work is performed in accordance with the construction documents and is overseen by CON inspectors in coordination with FMD.

The Workgroup will, in Action Step 3.2, develop a policy for performing future major sediment cleanout operations that would include a methodology on selecting the appropriate SPS for an operation and coordinating between appropriate divisions.

7. Policy for Maintaining Temporary Sediment Management Structures and Debris Control Measures in Burned Watersheds

In burned watersheds, Public Works may construct temporary sediment management structures and debris control measures such as rail and timber structures or place k-rails. During rainstorms, FMD and Road Maintenance Division (RMD) conduct routine observations of such temporary structures to ensure proper operation and clear any drainage obstructions. During inspections, deficiencies and/or substandard performances are addressed to restore functionality. Since these temporary sediment control structures are intended to remain for a period of at least five years until the burned watershed significantly recovers, there is a need to develop practices and procedures to remove these measures when they are no longer needed to reduce potential future liability.

In the case of rail and timber structure installation, Mapping and Property Management Division secures temporary construction permits followed by either easements or agreements with the property owners.

In Action Step 3.2, the Workgroup will develop a policy to address the maintenance issues associated with temporary debris control structures, especially securing the needed access rights to the structure locations, and the procedures for removing these structures after the burned watershed is adequately recovered.

8. Policy on Landfill Facilities for Accepting Debris from Public Works' Facilities

   There are two primary types of landfills that can be used for disposal of debris from Public Works' facilities: Inert landfills and municipal solid waste (Class III) landfills. A list of all landfills located within or near each sediment management area is presented in Appendix D. Three facilities (Brand, Burbank, and Whittier) are restricted to local municipalities and thus are not available to Public Works. One facility (Calabasas) is limited to locally generated sediment. The list designates the facility type, costs for disposal, restrictions on source of material, permitted daily capacity, average daily capacity, and other pertinent information.

   Inert waste landfills accept only nonhazardous materials (e.g. rock, soil, concrete, asphalt, etc.). These landfills typically have lower disposal costs than municipal solid waste landfills. In addition, most inert landfills may not be required to obtain a solid waste facility permit; therefore, the materials deposited are not added to the total disposal tonnages of the jurisdiction of origin for the purposes of calculating the jurisdiction's recycling rate.

   Sediment is trucked to landfills for daily cover by FMD and RMD on an intermittent basis at no charge. Although municipal solid waste landfills accept hazardous and nonhazardous material, they generally charge higher prices.

   The Workgroup will, under Action Step 3.3, consider inert landfills as a sediment placement alternative.

9. Practice for Measuring the Allowed Five Percent Organic Content in SPSs.

   Four SPSs (Dalton, Sunset Lower and Upper, and Manning Pit) are regulated by the California Regional Water Quality Control Board (RWQCB). The RWQCB's Waste Discharge Requirements (i.e. permits) for these facilities limit the organic content of sediment placed at these SPSs to a maximum of five percent. Public Works has applied this requirement to all its SPSs. However, since there is no formalized procedure for measuring the organic content of the material it removes from debris basins, FMD takes samples approximately 25 feet and 75 feet upstream of a basin's outlet tower, determines the organic content, and uses the results for reporting purposes.

   The Workgroup will, in Action Step 3.2, research existing testing standards and recommend the best practice for measuring the organic content to meet our needs and comply with RWQCB requirements.

10. Review and Approval of New Drainage Facilities

    Land Development Division (LDD) reviews subdivision improvement plans for private developments. This includes storm drain systems that will ultimately be transferred to the Flood Control District for maintenance. A large number of the storm drain projects reviewed and approved by LDD include debris control facilities. LDD allows homeowners' associations on larger developments to maintain moderately sized debris retention facilities (typically up to 150 cubic yards). Larger commercial and institutional developments are allowed to maintain facilities with higher debris volumes. Allowing for private maintenance is determined on a case-by-case basis depending on the ability of the entity to maintain the facilities. LDD approves new sediment control structures (debris basins and dams) after ensuring these facilities are being designed in accordance with the Public Works Debris Basin Design Manual. The Public Works' Hydrology and Sedimentation Manual is utilized to calculate debris volumes for sizing the sediment control structures. Public Works' standards allow for debris-carrying systems, but the allowable cumulative sediment load of the system is limited to a maximum of 1,000 cubic yards accompanied by minimum requirements for drain size, slope, and concrete thickness.

Considering the increasing number of small sediment control facilities transferred to Public Works in the past 10 years, there is a need to validate the design standards for debris-carrying closed systems.

The design standards for closed debris-carrying systems will be investigated by the Workgroup under Action Step 3.4.

11. Require Developments with Sediment Retention Facilities to Fund Establishment of New SPSs

Currently, Public Works does not require developers to provide fees towards establishing new regional SPSs as part of their project.

Considering the deficiency and lack of SPS facilities in several areas of the County, the Workgroup will, under action step 2.3, work with LDD to develop a policy requiring new developments with sediment control structures that will be transferred to the Flood Control District, to provide fees or other acceptable compensation towards the establishment of a regional SPS facility(s), and to accommodate the sediment disposal needs for 20 years.

12. Practices for Cleaning Road Shoulders and Culverts

RMD cleans and grades road shoulders at least once per year. Road culverts, along with their inlet and outlet areas, are inspected and cleaned, if necessary, at least once per year. Road crews respond to specific incidences of slides along the roadway and remove the slide material.

13. Use of Temporary Stockpile Areas for Storing Sediment

Slide material is usually transported to roadside storage areas and stockpiled. This material is typically used to replace material lost on the road shoulders through natural erosion processes. RMD transports organics and vegetation from cleanouts to landfill facilities. Sediment is transported to local roadside storage areas or landfills.

14. Cleanout Policy for Reservoirs

On July 14, 1978, the Flood Control District established a sediment removal policy for most of its reservoirs. The justification for cleanouts was based on the reservoir volume that must be maintained to serve its designated flood control and/or debris control functions. Considering the newly adopted hydrology method and burn policy, it is recommended this cleanout policy be reevaluated. In addition, the cleanout criteria for the recently acquired Morris Dam should be established.

The reevaluation of the cleanout policy for reservoirs is included in the Appendix A recommendations.

3.0 Action Step 3: Current Issues, Needs, and Deficiencies

For the purposes of investigating and identifying the current sediment management issues, needs, and deficiencies in the County of Los Angeles, the Strategic Plan divided the County into five Sediment Management Areas (see location map in Appendix E). An information sheet for each SPS facility is presented in Appendix F. The following is a summary of findings and recommendations.

3.1 Sediment Management Area I: Santa Monica Mountains

The Santa Monica Mountains Sediment Management Area (Area I) is approximately 500 square miles in size and is located west of the 110 Harbor Freeway and south of the 101 Ventura Freeway (see Appendix E). The following is a summary of the sediment management issues and needs relating to flood control and road maintenance facilities.

Sediment Management Facilities – Flood Control Facilities Debris Retaining Inlets (DRIs)

Seventeen DRI facilities are located in Area I (as listed in Appendix G) with a total sediment storage capacity of 30,000 cubic yards.

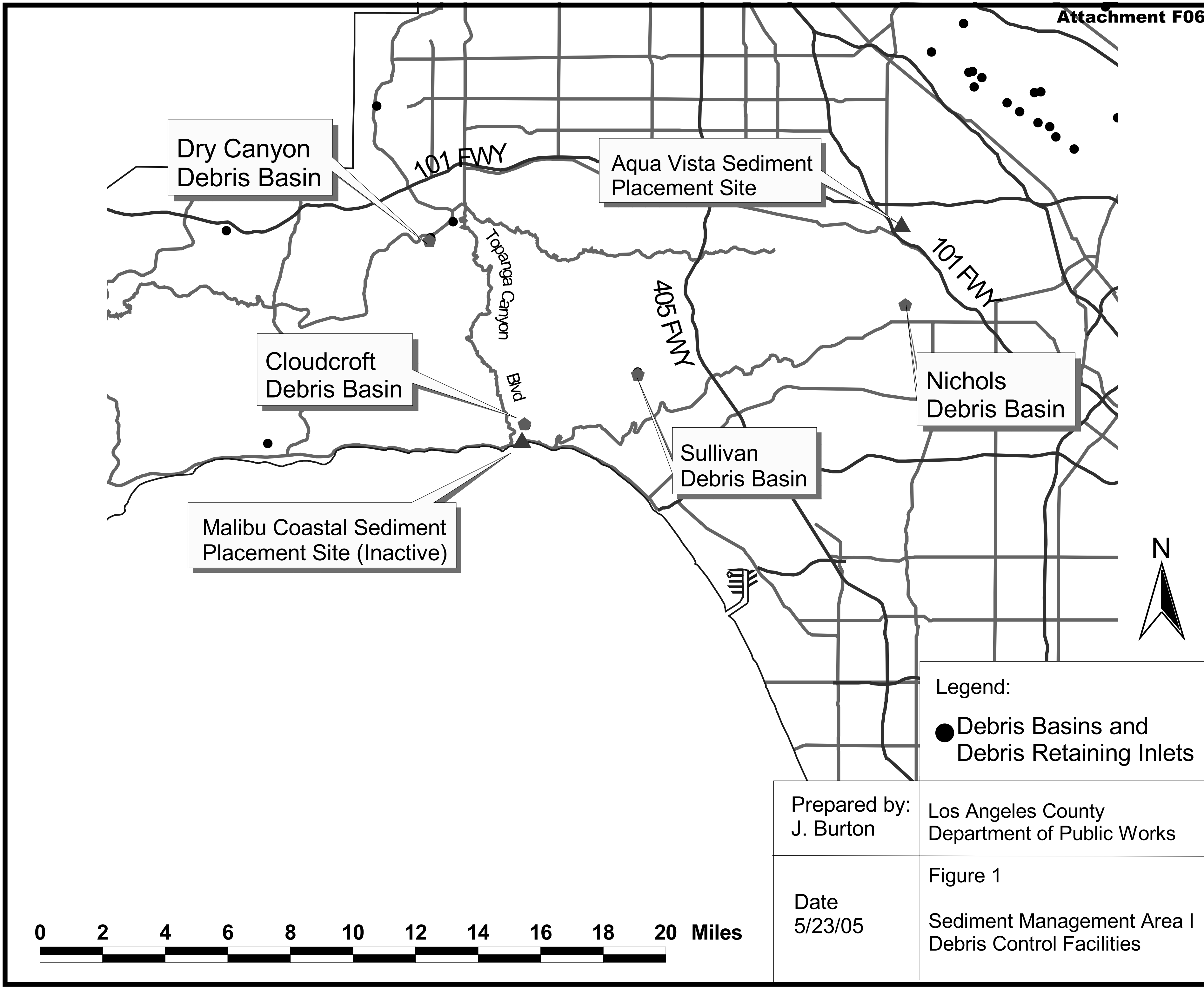
Debris Basins

Four debris basins are located in Area I (Cloudcroft, Dry Canyon–South Fork, Nichols, and Sullivan Debris Basins) as shown in Figure 1 on the next page. The four debris basins have a total annual average sediment production rate of 7,500 cubic yards and currently have 4,200 cubic yards of sediment in storage. Based on Public Works' design standards requiring debris basins to have a minimum storage capacity of one Design Debris Event (DDE), two of the debris basins are currently undersized (see Table 3-1 below).

Table 3-1
Undersized Debris Basins
Sediment Management Area I (Santa Monica Mountains)

Name of Debris Basin	DDE (Cubic Yards)	Design Storage Capacity (Cubic Yards)	Design Ratio (Design Capacity/DDE)	DDE Potential Overflow (Cubic Yards)
Dry Canyon–South Fork	22,000	7,900	0.36	14,100
Sullivan	79,000	51,000	0.65	28,000

In May 2000, WRD prepared a Project Concept Report (PCR) for Dry Canyon-South Fork Debris Basin. Based on the PCR, if mudflow overtops the roadway during major storms, Calabasas High School campus could be flooded



Dry Canyon Debris Basin
101 FWY
Aqua Vista Sediment Placement Site
Topanga Canyon Blvd
405 FWY
101 FWY
Cloudcroft Debris Basin
Nichols Debris Basin
Sullivan Debris Basin
Malibu Coastal Sediment Placement Site (Inactive)
N
Legend:
Debris Basins and Debris Retaining Inlets
Prepared by: J. Burton
Los Angeles County Department of Public Works
Date 5/23/05
Figure 1
Sediment Management Area I Debris Control Facilities
0 2 4 6 8 10 12 14 16 18 20 Miles

creating a potential danger to the students at the school. The PCR identified and recommended an enlargement alternative with an estimated cost of $900,000.

In February 2000, WRD prepared a PCR to enlarge Sullivan Debris Basin at an estimated cost of $550,000. This would prevent potential overtopping during major events causing flooding and mudflow damage to approximately 17 homes along Old Ranch Road. After enlargement, this facility would fall under the jurisdiction of the State Division of Safety of Dams (DSOD).

Considering the potential impacts due to deficient sediment storage capacity in the two former facilities, it is recommended the final design plans and construction documents be prepared to enlarge both facilities and the two projects be programmed for future construction (Program F115). Due to the significant increase in the costs of materials and environmental compliance, it is also recommended that the costs for these two proposed projects be reevaluated prior to their inclusion in our five-year capital construction program.

SPS Facilities

Aqua Vista SPS is the only sediment placement facility in Area I. Its original fill capacity was 40,800 cubic yards, and 28,700 cubic yards of sediment have been placed in the SPS since its first service year in 1965 (an average annual rate of 750 cubic yards).

Table 3-2
Flood Control Sediment Placement Sites (SPSs) in
Sediment Management Area I (Santa Monica Mountains)

Name of SPS	Issues	Needs
Aqua Vista	• Community opposition.	• Deficient (estimated remaining service life 16 years)

Aqua Vista SPS has an estimated remaining capacity of 12,100 cubic yards with an estimated remaining service life of 16 years. This SPS has been determined to be deficient since the estimated remaining life is less than 20 years. There is also a desire in the area to landscape the perimeter of this facility. The recommendation to facilitate a permittee sediment removal project at Aqua Vista to restore capacity is included in Appendix A. This should be implemented along with the community's desire for perimeter landscaping at the facility. Action Step 4.3 will include an outreach program to address community opposition issues at Aqua Vista SPS.

Appendix A includes the recommendation to evaluate the feasibility of obtaining permits to reactivate the Malibu Coastal Sediment Placement Site, operations which were suspended in 1995 due to regulatory agency permit renewal problems. In addition, since the County of Los Angeles Department of Beaches and Harbors needs sand for beach replenishment purposes, Appendix A recommends coordination with them to evaluate the characteristics of sediment at Public Works' debris control facilities to determine its suitability.

Sediment Management Facilities – Road Maintenance Issues and Needs

Public Works' Road Maintenance Districts 1, 3, and 5 maintain roads and culverts in Area I. Road Maintenance District 1 (MD1) and MD5 continue to coordinate with the U.S. Forest Service (USFS) to obtain permits and utilize roadside storage to address their sediment management needs. MD1 and MD5 have expressed their desire for additional facilities. Their requests have been forwarded to the USFS for consideration to be incorporated into the Angeles Forest Plan Update's Environmental Impact Statement the agency is currently preparing.

MD3 moves approximately 60,000 cubic yards of sediment annually from maintaining mountain roads and culverts during storms. MD3 temporarily stockpiles the sediment at nine locations along the side of the road right of way during storms and utilizes the majority of this material to fill erosion areas along the road shoulders (see Matrix in Appendix A, locations: Road Maintenance District 3 RD 336 and 339 Yards). MD3 annually transports an estimated 6,000 cubic yards of this material to landfills.

Since temporary storage of this sediment along County roads has occasionally caused community opposition, MD3 has a need to locate a new SPS facility(s) in Area I with a minimum sediment fill capacity of 120,000 cubic yards to address its sediment management needs for the next 20 years. MD3 has identified the following locations as potential permanent SPS facilities:

Table 3-3
Potential Road Sediment Placement Sites in MD3
Sediment Management Area I (Santa Monica Mountains)

SPS Facility	Property Owner	Estimated Useful Life
Mulholland Highway near Camp Kilpatrick	Los Angeles County Probation Department	35 years
Malibu Canyon Road south of Piuma Road	Public Works	9 years
Kanan Road at CM 6.44	Privately Owned	2 years
Mulholland Highway at CM 24.59	Privately Owned	8 years
Mulholland Highway at CM2 4.18	Privately Owned	32 years

These potential sites could serve as permanent sites to be used as borrow and/or fill sites by MD3. Therefore, Appendix A recommends to investigate locating a new permanent SPS facility at any of the above locations.

Sediment Management Facilities – Landfills

Appendix C lists the landfills in the Sediment Management Areas. Environmental Programs Division has identified the following inert landfills as being suitable for hauling sediment from the Area I debris control facilities:

Table 3-4
Landfills for Material from
Sediment Management Area I (Santa Monica Mountains)

Landfill	Location	Disposal Cost (Tipping Fee for 10-Wheel Load)
Cal-Mat Sun Valley (Vulcan Materials)	Sun Valley	$85
Strathern	Sun Valley	$90
Atkinson Brick Company	Los Angeles	$98
Chandler's Landfill	Rolling Hills Estates	$95

3.2 Sediment Management Area II: San Gabriel Mountains

The San Gabriel Mountains Sediment Management Area (Area II) is approximately 1,230 square miles in size and located east of the 110 Harbor Freeway along the San Gabriel Mountains watershed boundaries (see Appendix E). Area II is considered the most active sediment generation area in the County of Los Angeles and has the greatest sediment management deficiencies. The following is a summary of the sediment management issues and needs relating to flood control and road maintenance facilities.

Sediment Management Facilities – Flood Control Facilities and Debris Retaining Inlets

Forty-three DRI facilities are located in Area II (as listed in Appendix G) with a total sediment storage capacity of 97,000 cubic yards.

Debris Basins and Reservoirs

Eighty-two debris basins and 14 reservoirs (as listed in Appendix G) are located in Area II.

Table 3-5
Sediment Management Facility Production and Storage in
Sediment Management Area II (San Gabriel Mountains)

Sediment Management Facility	Number of Facilities in Area II	Average Annual Sediment Production (Cubic Yards)	Total Sediment Currently in Storage (Cubic Yards)
Debris Basins	82	235,000	204,000
Reservoirs	14	1,710,000	37,000,000

Based on Public Works' design standards requiring debris basins to have a minimum storage capacity of one Design Debris Event (DDE), 25 debris basins in Area II are currently undersized (see Table 3-6 below). Considering the potential sediment flow impacts from these undersized debris basins, it is recommended final design plans and construction documents to enlarge the 12 debris basins with approved Project Concept Reports (PCRs) be prepared and these projects be prioritized and programmed for future construction under Program F115. It is further recommended that PCRs for the remaining deficient 14 debris basins be programmed for future construction.

Table 3-6
Undersized Debris Basins in
Sediment Management Area II (San Gabriel Mountains)

No.	Name of Debris Basin	DDE (Cubic Yards)	Design Storage Capacity (Cubic Yards)	Design Ratio (Design Capacity / DDE)	DDE Potential Overflow (Cubic Yards)	PCR Approved?
1	BIGBRIAR	4,800	2,600	0.54	2,200	Y
2	BUENA VISTA	24,000	21,800	0.91	2,200	N
3	CARRIAGE HOUSE	6,700	6,100	0.91	600	N
4	DUNSMUIR	106,000	102,700	0.97	3,300	N
5	EMERALD-EAST	17,400	13,600	0.78	3,800	Y
6	ENGLEWILD	63,500	40,600	0.64	22,900	Y
7	FIELDBROOK	11,100	2,800	0.25	8,300	Y
8	HOG	51,000	42,500	0.83	8,500	Y
9	LAS FLORES	59,800	55,600	0.93	4,200	N
10	LINCOLN	69,300	38,400	0.55	30,900	Y
11	MULL	31,500	12,500	0.40	19,000	Y
12	OLIVER	33,800	32,100	0.95	1,700	N
13	PICKENS	192,800	125,100	0.65	67,700	Y
14	PINELAWN	4,800	3,200	0.67	1,600	N

Table 3-6 (cont.)

No.	Name of Debris Basin	DDE (Cubic Yards)	Design Storage Capacity (Cubic Yards)	Design Ratio (Design Capacity / DDE)	DDE Potential Overflow (Cubic Yards)	PCR Approved?
15	SIERRA MADRE	258,200	136,400	0.53	121,800	N
16	SNOVER	37,000	24,800	0.67	12,200	N
17	SOMBRERO	128,400	87,900	0.68	40,500	Y
18	SPINKS	59,800	56,000	0.94	3,800	N
19	STARFALL	28,300	14,900	0.53	13,400	Y
20	STETSON	46,100	41,300	0.90	4,800	N
21	STURTEVANT	5,500	1,400	0.25	4,100	Y
22	SUNNYSIDE	5,300	3,400	0.64	1,900	Y
23	TURNBULL	24,100	21,600	0.90	2,500	N
24	UPPER ROWLEY	48,500	28,800	0.59	19,700	N
25	WINERY	33,800	29,200	0.86	4,600	N

SPS Facilities

There are 23 SPS facilities located in Area II, 19 of which are active and four inactive. Seven facilities have been retired. These facilities are listed in Appendix G. Below is a summary table identifying the issues and needs at all SPS facilities in Area II.

Table 3-7
Summary of Issues and Needs for SPSs in Sediment Management Area II (San Gabriel Mountains)

No.	Name of SPS	Issues	Needs	Active
1	Auburn	• Difficulties hauling material through the Cities of Sierra Madre and Pasadena. • Site small for operation (no turn around area).	• Deficient (estimated remaining service life 8 years).	Yes
2	Bailey	• Cannot use SPS since it is being used as a city park. • Community opposition. • There is no concept for an ultimate fill plan.	• Need to find a substitute SPS in vicinity with adequate capacity.	No

Table 3-7 (cont.)

No.	Name of SPS	Issues	Needs	Active
3	Burro Canyon	• SPS property has special use permit (expires 2008). Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).		Yes
4	Cogswell	• There is no concept for an ultimate fill plan. • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).		Yes
5	Dalton	• Community opposition.	• Deficient (SPS is nearly full from recent Big Dalton reservoir cleanout).	Yes
6	Dunsmuir	• Community opposition.		Yes
7	Eagle	• Community opposition. • There is no concept for an ultimate fill plan.	• Deficient (estimated remaining service life 9 years).	Yes
8	Hastings Canyon	• There is no concept for an ultimate fill plan.		Yes
9	Hay	• There is no concept for an ultimate fill plan.	• Environmental documents needed.	No
10	Las Flores	• There is no concept for an ultimate fill plan.	• Environmental documents needed.	No
11	Lincoln	• This is a critical facility mainly used during storms/emergencies. Must address deficiencies since there are few SPSs in the area. • Department received large community opposition from last mining operation. • Need to confirm current capacity after last mining operation.	• Deficient (estimated remaining service life 11 years).	Yes
12	Live Oak	• There is no concept for an ultimate fill plan.	• Environmental documents needed.	No
13	Maddock			Yes
14	Manning Pit	• Community opposition. • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).	• Deficient (estimated remaining service life 19 years).	Yes

Table 3-7 (cont.)

No.	Name of SPS	Issues	Needs	Active
15	Maple Canyon	• There is no concept for an ultimate fill plan. • SPS property has USFS Special Use Permit (expires 5/23/2005). • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).		Yes
16	May	• Community opposition. • There is no concept for an ultimate fill plan. • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).		Yes
17	Rubio			Yes
18	San Dimas	• Community opposition. • There is no concept for an ultimate fill plan.	• Deficient (SPS is nearly full from recent reservoir cleanouts).	Yes
19	Santa Anita	• Community opposition. • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).	• Oak trees present.	Yes
20	Sawpit	• Community opposition. • Plans are missing.		Yes
21	Spinks	• There is no concept for an ultimate fill plan.		Yes
22	Webb	• Community opposition.	• Oak trees present.	Yes
23	Zachau	• Community opposition. • Plans are missing		Yes

Table 3-8
Summary of Issues and Needs for Retired Flood Control SPSs in Sediment Management Area II (San Gabriel Mountains)

No.	Name of SPS	Issues
24	Big Dalton	• Possible acquisition of adjacent vacant land to increase capacity.
25	Big Tujunga	• Last used in 1979. • The Special Use Permit issued by the USFS in 1969 has expired, and they have indicated they desire to use the site for recreational purposes.
26	Eaton	• Filled in excess of its design capacity.
27	Malibu Coastal Charthouse	• Permits were unable to be renewed with the Corps of Engineers and the State Lands Commission after they expired in 1995. Last sediment placed in 1993.
28	Puddingstone Diversion	• Being used as San Dimas Spreading Grounds. Never placed material on SPS.
29	Shields	• Filled to capacity in 1976. A portion was compacted for building pads. PMD is looking into suitability for La Crescenta Library site.
30	Sierra Madre Villa	• Filled to capacity and sold to LACD Parks and Recreation in 1973.
31	West Ravine	• Filled to capacity in 1973.

With an original fill capacity of 91 million cubic yards, the remaining fill capacity of all SPS facilities in Area II is 27 million cubic yards (excluding Burro SPS with its remaining fill capacity of 27 million cubic yards).

Area II has six deficient SPS facilities, four SPS facilities requiring environmental documents, and one SPS facility is being used as a city park. The six deficient SPS facilities would require an additional sediment fill capacity of 4.1 million cubic yards of sediment to meet our needs in the next 20 years (see summary table below).

Table 3-9
Deficient Flood Control SPSs in Sediment Management Area II (San Gabriel Mountains)

No.	Deficient SPS Facility	Original Fill Capacity (Cubic Yards)	Average Annual (Cubic Yards)	Remaining Fill Capacity (Cubic Yards)	Remaining Service Life (Years)	Deficient Capacity (Cubic Yards)
1	Auburn	19,800	534	4,300	8	6,400
2	Dalton	1,637,000	43,079	0	0	861,600
3	Eagle	147,000	2,711	25,000	9	29,200
4	Eaton	108,200	5,521	0	0	110,400
5	Lincoln	270,100	41,322	54,500	11	41,300
6	San Dimas	3,350,000	112,000	0	0	3,350,000

Historically, an estimated 1.3 million cubic yards of sediment has been annually placed in Area II SPS facilities. An estimated 32 million cubic yards of sediment from Area II are anticipated to be placed in the active SPS facilities in the next 20 years.

To address the deficiency in the seven SPS facilities, Appendix A recommends investigation of feasible alternatives to enlarge these deficient SPS facilities. The feasibility of implementing permittee sediment removal projects at selected SPS facilities would also be evaluated. It is also recommended sites be evaluated to establish new SPSs. This would include further discussions with Holliday Rock in Upland, United Rock in Irwindale, and the City of Irwindale on reclaiming abandoned gravel pits by placing excavated sediment from Public Works' flood control facilities as shown on Figure 2.

Appendix A recommends the workgroup address the environmental issues with the four deactivated SPS facilities in Area II. The feasibility and cost of preparing environmental documents and obtaining permits to activate these facilities will be evaluated.

In addition, Appendix A recommends the workgroup develop an action plan to evaluate the cost and feasibility of working with the USFS to prepare environmental documents for establishing new reservoir SPSs for Big Dalton, Pacoima, San Dimas, and Santa Anita Reservoirs as shown on Figure 3. Public Works previously submitted proposed SPS sites in the Angeles National Forest to USFS for future consideration. Consultant fees for preparing environmental documents are estimated to exceed $300,000 for each SPS site. The demand and anticipated stakeholder opposition to the proposed Angeles Forest SPSs vary. We estimate it will take two years to obtain permits for the establishment of each new SPS facility.

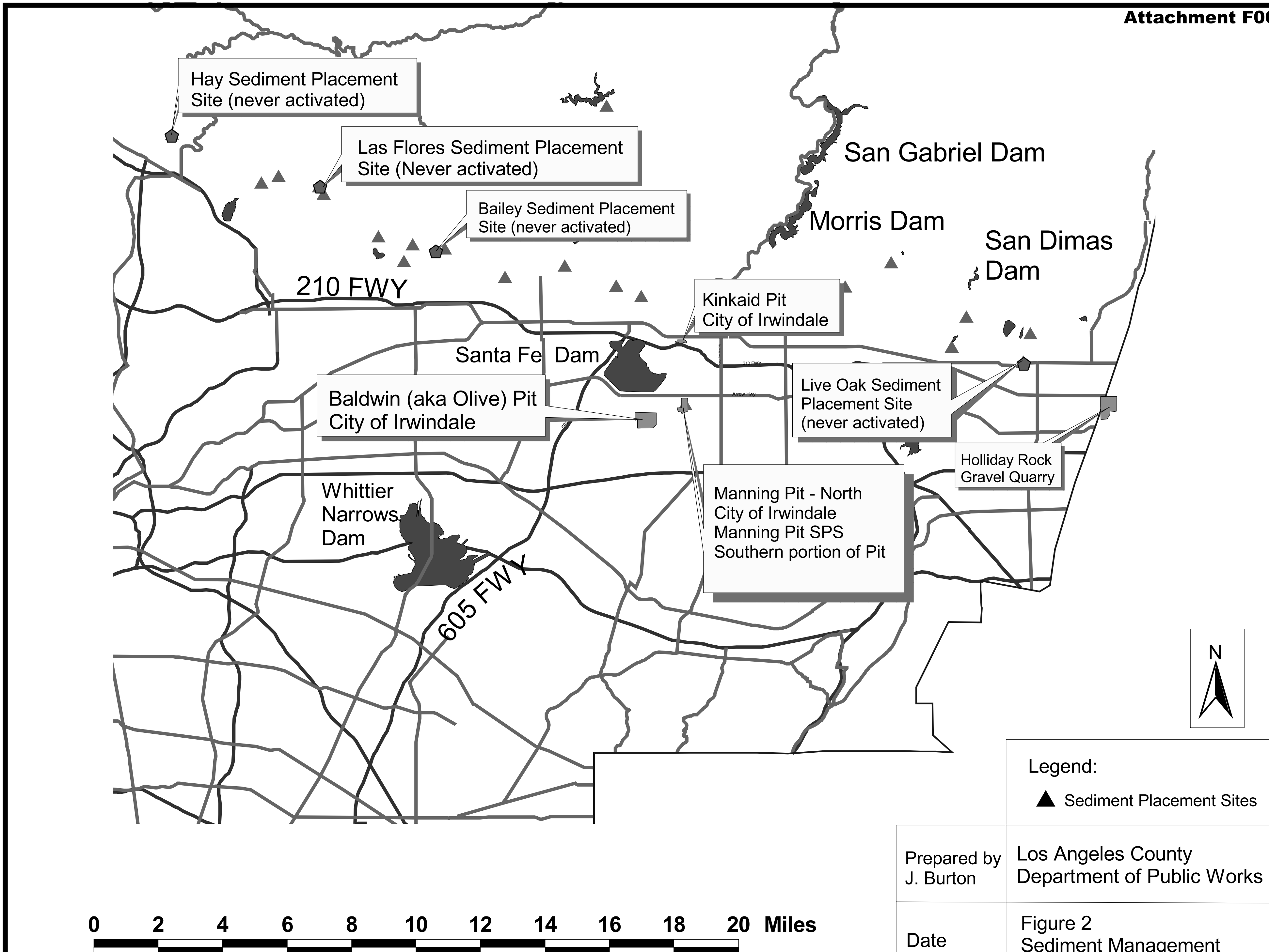
To address the issue with the 13 SPS facilities that do not have ultimate fill plans, it is recommended that these facilities be prioritized and the preparation of ultimate fill plans be programmed.

Sediment Management Facilities – Road Maintenance Issues and Needs

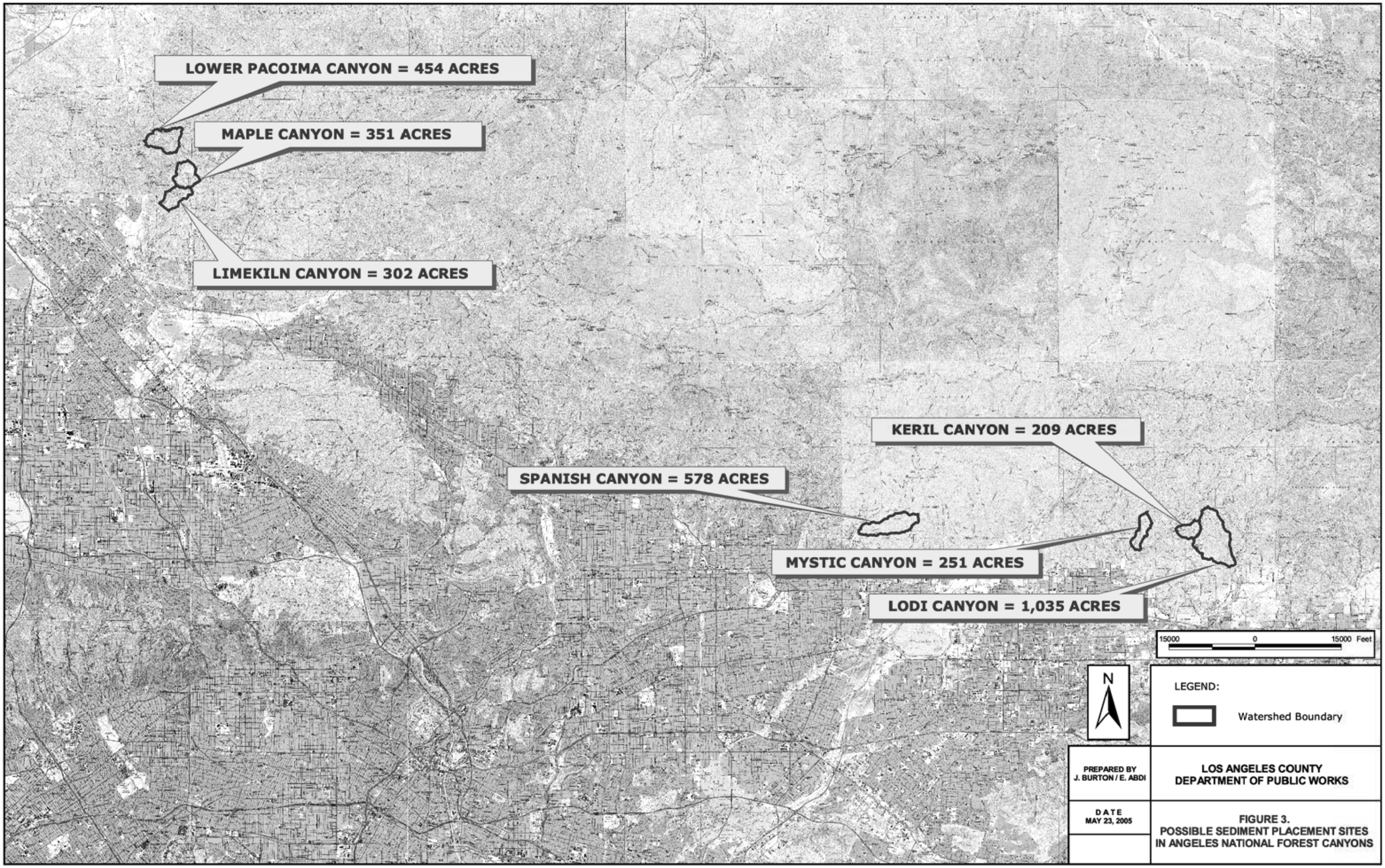
Road Maintenance District 1 (MD1) maintains roads and culverts in Area II. MD1 annually moves about 37,000 cubic yards of sediment from its mountain roads and culverts. MD1 continues to utilize temporary and permanent sediment placement sites and has no need to locate additional SPS facilities in Area II to address its sediment management needs for the next 20 years.

MD1 temporarily stockpiles the sediment at nine locations along the side of the road right of way during storms. MD1 subsequently utilizes the majority of this material to fill erosion areas along the road shoulders (see Matrix in Appendix A, locations: Road Maintenance District 1). These locations are within the Angeles National Forest boundaries, and MD1 obtains its own permits for these locations. Additionally, MD1 has utilized the following four flood control SPS facilities for sediment disposal: Burro Canyon, San Dimas, Santa Anita, and West Ravine (currently full).

Attachment F06-4a



Prepared by J. Burton	Los Angeles County Department of Public Works
Date 5/23/05	Figure 2 Sediment Management Area II Debris Control Facilities



PREPARED BY
J. BURTON / E. ABDI

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

DATE
MAY 23, 2005

FIGURE 3.
POSSIBLE SEDIMENT PLACEMENT SITES
IN ANGELES NATIONAL FOREST CANYONS

Sediment Management Facilities – Landfills

Appendix C lists the landfills in the Sediment Management Areas. Environmental Programs Division has identified the following inert landfills as being suitable for hauling sediment from the Area II debris control facilities:

Table 3-10
Landfills for Sediment from
Sediment Management Area II (San Gabriel Mountains)

Landfill	Location	Disposal Cost (Tipping Fee for 10-Wheel Load)
Peck Road Gravel Pit	Monrovia	$30
Puente Hills	Whittier	No cost for sediment used for daily cover
Reliance Pit #2	Irwindale	$40
Savage Canyon	Whittier	No cost for sediment used for daily cover
United Rock –Nu Way Arrow	Irwindale	$55
Arcadia Reclamation	Arcadia	$55

3.3 Sediment Management Area III: Santa Susana Mountains

The Santa Susana Mountains Sediment Management Area (Area III) is approximately 260 square miles in size located southwest of the 210 Foothill Freeway, north of the 101 Ventura Freeway, and east of the 405 San Diego Freeway (see Appendix E). The following is a summary of the sediment management issues and needs relating to flood control and road maintenance facilities.

Sediment Management Facilities – Flood Control Facilities Debris Retaining Inlets

Twenty-two DRI facilities (as listed in Appendix G) are located in Area III with a total sediment storage capacity of 39,000 cubic yards.

Debris Basins

Twenty-six debris basins (as listed in Appendix G) are located in Area III with an average annual sediment production rate of 71,500 cubic yards.

Based on Public Works' design standards requiring debris basins to have a minimum storage capacity of one Design Debris Event (DDE), eight of the debris basins are currently undersized (see table below).

Table 3-11
Undersized Debris Basins in
Sediment Management Area III (Santa Susana Mountains)

No.	Name of Debris Basin	DDE (Cubic Yards)	Design Storage Capacity (Cubic Yards)	Design Ratio (Design Capacity/DDE)	DDE Potential Overflow (Cubic Yards)	PCR Approved?
1	Aliso	63,100	41,700	0.66	21,400	Y
2	Bracemar	1,600	700	0.44	900	N
3	Chamberlain	5,200	4,700	0.90	500	N
4	Deer	79,400	56,600	0.71	22,800	N
5	Irving Drive	4,100	1,200	0.29	2,900	N
6	Linda Vista	24,300	3,200	0.13	21,100	N
7	Oakmont View Drive	3,800	3,400	0.89	400	N
8	Verdugo	320,900	131,000	0.41	189,900	Y

SPS Facilities

There are four SPS facilities located in Area III. Only Browns SPS is operational. Browns SPS has 134,000 cubic yards of capacity left of its original 405,000 cubic yards. Historically, an estimated 8,000 cubic yards have been placed annually at Browns SPS.

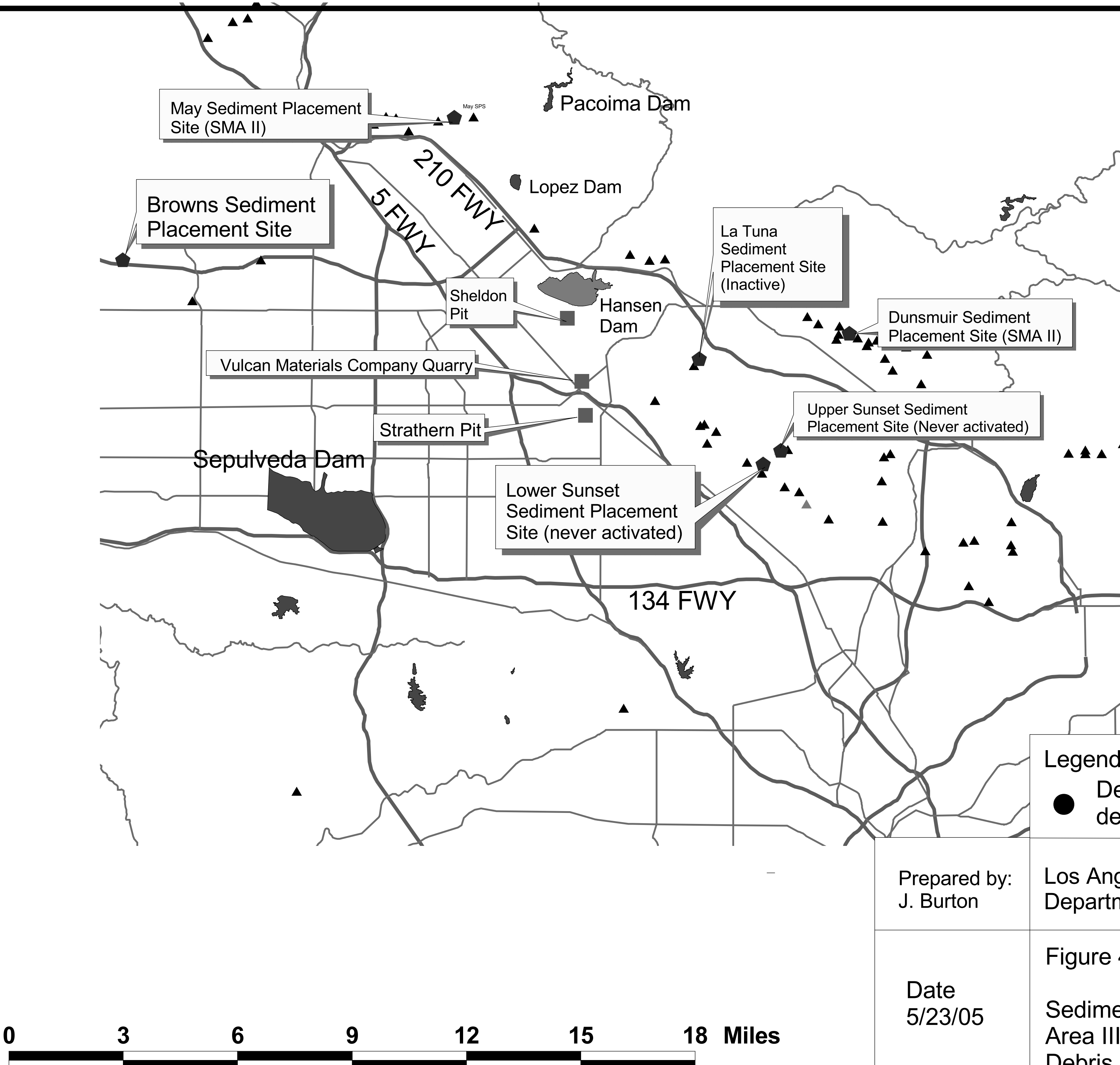
La Tuna SPS was used only in 1964 when 57,400 cubic yards of sediment were placed there. In the 1980s, Public Works' attempts to finalize an environmental document and obtain permits for operating La Tuna SPS were unsuccessful due to homeowner opposition. Sunset Lower and Sunset Upper SPSs (550,000 cubic yards total capacity) have never been activated. These facilities have RWQCB Waste Discharge Requirements but do not have approved environmental documents similar to Dalton SPS. (It is noted that our only SPSs with approved environmental documents are Manning Pit and Cogswell.)

Table 3-12
Summary of Issues and Needs for Active Flood Control SPSs in Sediment Management Area II (Santa Susana Mountains)

No.	Name of SPS	Issues	Needs
1	Browns	• Community opposition. • There is no concept for an ultimate fill plan.	• Deficient (estimated remaining service life three years).
2	La Tuna	• Plans are missing. • May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).	• Environmental documents needed (require 404, 401, WQC, and 1601 Agreements).
3	Sunset Lower	• SPS property is a combined fee & easement. • There is a blue line stream in SPS.	• We have RWQCB Waste Discharge Requirements • Environmental documents needed (require 404 and 1601 Agreements).
4	Sunset Upper	• There is a blue line stream in SPS.	• We have RWQCB Waste Discharge Requirements • Environmental documents needed (require 404 and 1601 Agreements).

It is recommended in Appendix A to investigate the cost and feasibility of preparing environmental documents for La Tuna, Sunset Lower, and Sunset Upper SPS facilities to enable these facilities to become operational as shown on Figure 4. The deficient fill capacity at Browns SPS and the feasibility of implementing a permittee sediment removal project would also be evaluated.

Additional discussions will be undertaken with Vulcan Materials in Sun Valley to evaluate the feasibility of trucking our excavated sediment to their quarry for grading operations. Vulcan needs 500,000 cubic yards of sediment over the next three years. Sheldon Pit and Strathern Pit are to be acquired by Public Works for the Sun Valley Project for storm runoff recharge and detention purposes, respectively. Under Action Steps 3.2 and 3.5, we will evaluate the schedule and requirements for using Sheldon Pit and Strathern Pit for sediment placement operations. These pits each require a minimum of 1 million cubic yards of sediment to enable them to be used for the Sun Valley Project.



Legend:
● Debris basins and debris retaining inlets

Prepared by: J. Burton	Los Angeles County Department of Public Works
Date 5/23/05	Figure 4 Sediment Management Area III Debris Control Facilities

Sediment Management Facilities – Landfills

Appendix C lists the landfills in the Sediment Management Areas. Environmental Programs Division has identified the following inert landfills as being suitable for hauling sediment from the Area III debris control facilities:

Table 3-13
Landfills for Sediment from
Sediment Management Area III (Santa Susana Mountains)

Landfill	Location	Disposal Cost (Tipping Fee for 10-Wheel Load)
Bradley	Sun Valley	$50
Cal Mat	Sun Valley	$85
Scholl Canyon	Eagle Rock	No cost for sediment used for daily cover
Strathern Pit	Sun Valley	$90

Note: Scholl Canyon is currently only receiving sediment for daily cover until 2:30 pm on Wednesday through Saturday since the current supply exceeds demand.

Sediment Management Facilities – Road Maintenance Issues and Needs

MD5 has no need for additional permanent sediment storage facilities in Area III. MD5 uses roadside storage areas outside of and within USFS jurisdiction. For its road maintenance activities outside Area III, MD5 obtains permits from the USFS for their SPS sites. They remove about 20,000 cubic yards per year from maintaining the roads' right of way.

3.4 Sediment Management Area IV: Santa Clara River Watershed

The Santa Clara Sediment Management Area (Area IV) is approximately 810 square miles in size located north of the San Gabriel Mountains watershed and east of the 5 Interstate Freeway (see Appendix E). A large number of new communities and developments are being constructed in Area IV. The following is a summary of the sediment management issues and needs relating to flood control and road maintenance facilities.

Sediment Management Facilities – Flood Control Facilities Debris Retaining Inlets

One hundred seventeen DRI facilities (as listed in Appendix G) are located in Area IV with a total sediment storage capacity of 147,000 cubic yards.

Debris Basins

Six debris basins (as listed in Appendix G) are located in Area IV with a total annual average sediment production rate of 5,000 cubic yards.

Based on Public Works' design standards requiring debris basins to have a minimum storage capacity of one Design Debris Event (DDE), William S. Hart Park is currently undersized (see table below).

Table 3-14
Undersized Debris Basins in
Sediment Management Area IV (Santa Clara River Watershed)

No.	Name of Debris Basin	DDE (C.Y.)	Design Storage Capacity (C.Y.)	Design Ratio (Design Capacity/DDE)	DDE Potential Overflow (C.Y.)	PCR Approved?
1	WILLIAM S. HART PARK	7,200	2,400	0.33	4,800	Y

SPS Facilities

Wildwood SPS is the only sediment placement facility in Area IV. With an original fill capacity of 77,100 cubic yards, sediment has been placed in Wildwood SPS at an average annual rate of 500 cubic yards. Wildwood SPS has an estimated remaining fill capacity of 59,800 cubic yards. We recommend development of an ultimate fill plan for this facility be programmed. Additionally, considering the high levels of development in this area and the six debris basin and 117 DRI facilities generating an estimated 250,000 cubic yards of sediment in the next 20 years, we anticipate Wildwood SPS will become deficient and recommend that Action Step 3.2 investigate new potential SPS sites.

Table 3-15
Summary of Issues and Needs for Debris Basin SPSs in
Sediment Management Area IV (Santa Clara River Watershed)

No.	Name of SPS	Issues	Needs
1	Wildwood	• There is no concept for an ultimate fill plan.	• Although SPS has adequate capacity based on current needs, we anticipate it will become soon deficient due to cleanouts from 117 DRI facilities.

Sediment Management Facilities – Landfills

Due to Chiquita Canyon Landfill's $55 per ton tipping fee for soil, it is not considered to be a viable landfill site for sediment placement purposes in Area IV. There are no other landfill facilities in this area.

Sediment Management Facilities – Road Maintenance Issues and Needs

Most of this area is developed with graded slopes. Sediment removed from the road right of way is stored in shoulder areas and reused.

3.5 Sediment Management Area V: Antelope Valley

The Antelope Valley Sediment Management Area (Area V) is approximately 1,280 square miles in size located north of the 101 Ventura Freeway and west of the 5 Interstate Freeway (see Appendix E). Area V is characterized with a lack of sediment management facilities since there are no debris basins, debris retaining facilities, reservoirs, or SPS facilities in Area V. The following is a summary of the sediment management issues and needs relating to flood control and road maintenance facilities.

Land Development Division has not received any development projects in the past or present that include debris control facilities. Consequently, no planning is required for establishment of SPS facilities in this area.

Sediment Management Facilities – Road Maintenance Issues and Needs

Road Maintenance has no sediment management needs in Area V.

Sediment Management Facilities – Landfills

Appendix C lists the landfills in the Sediment Management Areas. Environmental Programs Division has identified the following inert landfills as being suitable for hauling sediment from the Area V debris control facilities:

Table 3-16
Landfills for Sediment from
Sediment Management Area V (Antelope Valley)

Landfill	Location	Disposal Cost Tipping Fee (per ton)
Antelope Valley Landfill	Palmdale	$7.50 (For soil)
Lancaster Landfill	Lancaster	None (For clean soil)

APPENDIX A

STRATEGY 1 RECOMMENDATIONS

Following are the detailed recommendations for the Workgroup to implement resulting from the findings of Action Steps 1.2 and 1.3:

Key Recommendations

1. In coordination with Land Development Division, develop a policy requiring new development projects with sediment retention facilities in Sediment Management Area IV (Santa Clara River Watershed) to pay fees towards the construction of regional SPSs.

2. Under Action Step 3.2, for Sediment Management Areas I through IV, evaluate alternatives for disposing of sediment from Public Works' reservoir, debris basins, and debris retaining inlet (DRI) facilities over the next 20 years. These alternatives will include:

    a. Continue further evaluations and negotiations with Holliday Rock in Upland, United Rock in Irwindale, the City of Irwindale, and Vulcan Materials Company in Sunland on trucking our excavated sediment to their quarries and abandoned gravel pits for grading and pit reclamation purposes.

    b. Develop an implementation plan for using Sheldon Pit and Strathern Pit, which require sediment for fill purposes and will be acquired by Public Works as part of the Sun Valley Project.

    c. Evaluate the cost and feasibility of establishing new regional SPS facilities in the Santa Clara River region (Sediment Management Area IV) by preparing environmental documents, securing permits, and acquiring rights of way (including abandoned gravel pits).

3. Under Action Step 4.3, coordinate with Public Works' Public Relations Group to develop an outreach program to address the current issues of community opposition at various SPSs in Sediment Management Areas I, II, and III (Santa Monica Mountains, San Gabriel Mountains, and Santa Susana Mountains, respectively).

4. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) the preparation of ultimate fill plans for the following 10 SPSs that do not have them.

    a. Bailey, Cogswell, Eagle, Hastings Canyon, Lincoln, Maple Canyon, May, and Spinks SPSs in Sediment Management Area II (San Gabriel Mountains).

b. Browns SPS in Sediment Management Area III (Santa Susana Mountains).

c. Wildwood SPS in Sediment Management Area IV (Santa Clara River Watershed).

Other Future Recommendations

5. For Sediment Management Area I (Santa Monica Mountains), evaluate alternatives to establish a permanent SPS facility(s) for disposal of approximately 120,000 cubic yards of sediment resulting from Public Works' road maintenance operations during the next 20 years.

6. Under Action Step 3.2 for Sediment Management Areas I through IV, evaluate alternatives for disposing of sediment from Public Works' reservoirs, debris basins, and debris retaining inlet (DRI) facilities over the next 20 years. These alternatives will include:

   a. Evaluate the feasibility and cost to obtain permits to reactivate the Malibu Coastal Sediment Placement Site that suspended operations in 1995 due to regulatory agency permit renewal problems.

   b. Coordinate with the County Department of Beaches and Harbors to evaluate the feasibility, permit requirements, and cost to use facility sediment for beach sand replenishment purposes.

   c. Evaluate the cost and feasibility of establishing new SPS facilities in the Angeles National Forest for Pacoima, Santa Anita, Big Dalton, and San Dimas Reservoirs for Sediment Management Area II in the San Gabriel Mountains, including environmental documents and permits.

   d. Evaluate the cost and feasibility to secure permits requirements by preparing environmental impact documents to comply with the California Environmental Quality Act (CEQA) and, if needed, the National Environmental Policy Act (NEPA), for the establishment of seven SPS facilities (Bailey, Hay, Las Flores, La Tuna, Live Oak, Upper Sunset, and Lower Sunset) on Public Works' rights of way.

   e. Evaluate the feasibility and demand to implement permittee sediment removal projects at various existing SPSs to restore lost capacity.

   f. Evaluate the feasibility and demand for local agency and contractor use of our debris basin sediment for construction fill purposes.

   g. Evaluate the cost and feasibility to secure permits requirements by preparing environmental impact documents to comply with CEQA and, if needed, NEPA for the establishment of new regional SPS facilities on rights of way (including abandoned gravel pits) to be acquired for Public Works.

7. Develop strategies in coordination with the Public Relations Group to better market the reuse of the sediment in Public Works' SPSs by contractors, local agencies, and the County Department of Beaches and Harbors. These strategies include:

   a. Develop an SPS information web page.

   b. Initiate a SPS soils testing program to characterize the physical properties of the sediment. This will enable potential users to determine the viability of the sediment for their projects.

8. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) the preparation of Project Concept Reports (PCRs) for the following undersized debris basins:

   a. Sullivan Debris Basin in Sediment Management Area I (Santa Monica Mountains).

   b. Buena Vista, Carriage House, Dunsmuir, Englewild, Los Flores, Mull, Oliver, Pickens, Pinelawn, Snover, Spinks, Sombrero, Stetson, Turnbull, Upper Rowley, and Winery Debris Basins in Sediment Management Area II (San Gabriel Mountains).

   c. Bracemar, Chamberlain, Deer, Irving Drive, Linda Vista, and Oakmont View Debris Basins in Sediment Management Area III (Santa Susana Mountains).

9. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) preparation of the final design plans and construction documents to enlarge the following debris basins:

   a. Dry Canyon-South Fork Debris Basin in Sediment Management Area I (Santa Monica Mountains).

   b. Big Briar, Emerald East, Fieldbrook, Hog, Lincoln, Starfall, and Sunnyside Debris Basins in Sediment Management Area II (San Gabriel Mountains).

   c. Aliso and Verdugo Debris Basins in Sediment Management Area III (Santa Susana Mountains).

   d. William S. Hart Park Debris Basin in Sediment Management Area IV (Santa Clara River Watershed).

10. Update the Flood Control District's reservoir sediment removal policy. The updated policy will integrate the results from the new hydrology methods and burn policy to determine the reservoir volume that must be maintained to serve its designated flood control and/or debris control functions.

Appendix B
Sediment Management Matrix
Facilities Summary Sheet

Reservoirs			
Total Number of Reservoirs (1)			14
Total Maximum Capacity			193,565,000 CY
Total Debris in Storage [2004]			37,081,000 CY
Total Current Capacity [2004]			151,000,000 CY
Total Average Annual Debris Production [2004]			1,712,000 CY/YR
Debris Basins			
Total Number of Debris Basins			118
Total Maximum Capacity			7,909,000 CY
Total Debris in Storage [2004]			247,000 CY
Total Current Capacity [2004]			7,684,000 CY
Total Average Annual Debris Production [2004]			317,000 CY/YR
Sediment Placement Sites			
	Reservoir SPSs	*Debris Basin SPSs*	*Total*
Number of Active SPSs	8	14	29
Number of SPSs requiring permits and environmental documents for activation		7	
Number of Deficient SPSs (<20 yr lifespan)	1	6	7
Total Original Capacity	79,158,000 CY	16,642,900 CY	95,800,900 CY
Total Estimated Accumulated Sediment in Storage [2004]	32,566,700 CY	4,681,000 CY	37,247,700 CY
Total Current Capacity [2004]	48,444,500 CY	11,961,900 CY	58,553,200 CY
Total Average Annual Debris Deposited at SPS [2004]	1,193,997 CY/YR	110,073 CY/YR	1,304,070 CY/YR
Landfills and Dump Sites with Permits or Agreements			
Total Number of Landfills/Dump Sites			17
Alternative Debris Disposal Sites			
Total Number of Unclassified Landfills (Non Public Works Facility)			5
Total Number of Class III Landfills (Non Public Works Facility)			12
Road Maintenance District 1, Temporary Storage Sites			16
Road Maintenance District 3, Road District 339 Temporary Storage Sites			5
Road Maintenance District 3, Road District 336 Temporary Storage Sites			4
Road Maintenance District 5, Temporary Storage Sites			5
Retired Sediment Placement Sites			
	Public Works Facility	*Owned by Others*	*Total*
Total Number of Retired SPSs	8	3	11

Note: 1 AF = 1613.3 CY

(1) Puddingstone Dam and Reservoir is not included because most of its watershed is either developed or controlled by dams upstream.
As a result sediment deposition is negligible.

Appendix B
Sediment Management Matrix
Reservoir Data

Reservoir	Maximum Capacity (1)		Surface Area @ Spillway Elev. (Ac)	Required Flood Storage (Per 1978 Criteria Memo)		Design Debris Event (Per 1978 Criteria Memo)		Avg. Annual Debris Production (AADP) (CY)	Date of Last Survey	Capacity per Last Survey		Sediment in Storage	
	CY	AF		CY	AF	CY	AF			CY	AF	CY	AF
Big Dalton	1,699,000	1,053	23	968,000	600 (5)	460,000	285 (5)	19,000	Dec-03	1,576,000	977	123,000	76
									Sep-03	1,294,000	802	405,000	251
Big Tujunga	10,067,000	6,240	84	-	-	6,912,000	4,285	213,000	Nov-95	9,742,000	6,038	325,000	202
Cogswell	19219000 (1)	11913 (1)	148	55,971,000	34,700	3,331,000	2,065	150,000	Nov-99	18,588,000	11,139	631,000	774
San Gabriel	86,044,000	53,344	537			13,730,000	8,512	800,000	Nov-02	70,416,000	43,655	15,628,000	9,689
Devils Gate	7,423,000	4,601	136	-	- (8)	1,671,000	1,036	146,000	Nov-95	2,297,000 (2)	1,424 (2)	2,488,000 (3)	1,542 (3)
Eaton Wash	1465000 (1)	908 (1)	42	-	-	687,000	426	56,000	Jan-94	1,459,000	904	6,000	4
Live Oak	395000 (1)	245 (1)	11	242,000	150	153,000	95	5,500	Aug-03	329,000	204	66,000	41
Morris	52,111,000	32,300	326	-	- (9)	*836,000*	*518* (5)	104,000	Dec-98	36,357,000 (10)	22,540 (10)	13,101,000	8,122
Pacoima	9,777,000	6,060	58	-	-	2,424,000	1,503	92,000	Jul-92	5,699,000	3,532	4,078,000	2,528
Puddingstone Diversion	342000 (1)	212 (1)	17	-	-	377,000	234	17,000	Oct-03	312,246	194	29,754	18
San Dimas	2546000 (1)	1578 (1)	40	-	-	1,424,000	883	51,000	Dec-03	2,186,000	1,355	360,000	223
									Sep-03	1,940,000	1,203	606,000	376
Sawpit	767,931	476		759,864	471								
Santa Anita	1525000 (1)	945 (1)	14	-	-	982,000	609	53,000	Jul-04	1,283,000	795	185,000	114
Thompson Creek	926000 (1)	574 (1)	26	*N/A*	*N/A* (5)	225,000	139 (5)	5,900	Nov-03	866,000	537	60,000	37
Total	193,565,000	119,978		57,181,000	35,450			1,712,400		151,110,246	93,294	37,080,754	23,371

Notes:

1. Maximum capacity was modified from the original capacity.
2. At El. 1040'. At El. 1054' (old spwy el.) = 4,935,000 CY (3,095 AF). Reservoir Capacity estimated due to insufficient survey data.
3. Sediment in storage based on capacities at El. 1054' because original capacity at El. 1040' (new Spwy elev.) is unknown.
4. Morris needs to be sluiced before San Gabriel can be sluiced.
5. 1978 Memo did not specify. Cited amount calculated value.
6. The San Gabriel Canyon Sediment Management Plan for Cogswell, San Gabriel, and Morris Reservoirs require removal of the AADP to maintain adequate capacity.
7. Not economical to remove small volumes of sediment.
8. Need 300 AF below El. 1,020 ft
9. Morris is a water conservation facility, not a flood control facility.
10. Morris' current capacity is back-calculated utilizing a calculated reservoir bottom difference b/w Sept 1998 and Dec 1998 reservoir surveys.

Appendix B
Sediment Management Matrix
Debris Basin Data (Including 2003-2004 Storm Season)

DEBRIS BASIN	DPA ZONE	NUMBER OF SEASONS	TOTAL DEBRIS DEPOSITED (CU. YDS.)	AVERAGE ANNUAL DEBRIS PRODUCTION (1) (CU. YDS./YR.)	MAXIMUM SEASONAL DEBRIS PRODUCTION		ESTIMATED CONDITIONS		
							DEBRIS STORED (CU. YDS.)	CAPACITY AVAILABLE	
					CU. YDS.	SEASON		CU. YDS.	PERCENT
Aliso	4	34	302,597	8,900	52,206	1994-95	600	41,400	99%
Arbor Dell	2	33	3,983	121	800	1979-80	206	15,794	99%
Auburn	1	50	107,118	2,142	20,100	1961-62	1,800	37,200	95%
Bailey	1	59	298,876	5,066	91,000	1979-80	200	128,800	100%
Beatty	1	34	15,911	468	7,600	1979-80	4,050	38,950	91%
Bigbriar	1	33	4,290	130	866	1992-93	0	2,600	100%
Big Dalton (9)	1	45	1,055,627	23,458	296,700	1968-69	0	518,000	100%
Blanchard	1	36	80,621	2,239	36,600	1977-78	2,060	72,940	97%
Blue Gum	1	36	42,759	1,188	19,100	1977-78	760	39,240	98%
Brace	2	33	43,605	1,321	12,000	1977-78	1,950	28,050	94%
Bracemar	2	33	671	20	283	1980-81	135	565 (11)	81%
Bradbury	1	50	274,161	5,483	70,200	1968-69	8,200	81,800	91%
Brand (9)	1	69	351,109	5,089	53,100	1977-78	0	166,000	100%
Buena Vista	1	19	690	36	400	1992-93	200	21,800	99%
Carriage House	1	34	8,029	236	3,400	1979-80	100	6,000	98%
Carter	1	50	43,077	862	12,600	1979-80	400	27,600	99%
Cassara	1	28	31,907	1,140	16,800	1977-78	2,800	34,200	92%
Chamberlain	2	30	1,147	38	300	1974-75	0	4,800	102%
Chandler	2	5	200	40	(6)	(6)	200	19,800	99%
Childs (9)	1	41	65,530	1,598	10,700	1980-81	0	50,000	100%
Cloud Creek	1	32	4,232	132	1,800	1977-78	300	4,800	94%
Cloudcroft	4	31	13,992	451	6,100	1973-74	3,640	31,360	90%
Cooks	1	53	175,861 (3)	3,318 (3)	61,200 (3)	1977-78	1,900 (3)	50,100	96%
Cooks M-1A	1	29	(8)	(8)	(8)	(8)	2,000 (8)	32,000	94%
Crescent Glen	1	3	0	NA	NA	NA	0	21,000	100%
Crestview	1	21	50	2	(6)	(6)	0	5,900 (11)	100%
Crocker	8	21	13,506	643	5,745	1991-92	0	19,000 (11)	100%
Deer	1	50	174,931	3,499	44,200	1968-69	4,600	52,400	92%
Denivelle	2	28	12,391	443	5,500	1977-78	0	7,900	100%
Devonwood	1	23	10,325	449	5,800	1993-94	200	10,800	98%
Dry Canyon-South Fork	4	26	12,625	486	5,300	1979-80	480	7,420	94%
Dunsmuir	1	69	386,228	5,598	86,200	1977-78	5,300	97,700	95%
Eagle	1	68	206,381	3,035	41,700	1937-38	6,050	56,950	90%
Elmwood	1	40	57,891	1,447	16,100	1980-81	2,550	58,450	96%
Emerald-East	2	40	13,966	349	1,800	1985-86	610	13,390	96%
Englewild (9)	1	43	100,036 (2)	2,326	60,200 (2)	1968-69	0	41,000	100%
Fair Oaks	1	69	117,440	1,702	15,700	1935-36	200	23,800	99%
Fern	1	69	189,652	2,749	23,900	1968-69		44,000	102%
Fieldbrook	6	30	2,366	79	500	1991-92		11,000	100%
Golf Club Drive	2	34	35,793	1,053	11,600	1979-80	300	14,700	98%
Gooseberry	1	6	1,027	171	1,027	2000-01	1,027	33,973	97%
Gordon (9)	1	31	7,404	239	3,800	1977-78	0	36,000	100%
Gould	1	57	123,269	2,163	18,000	1965-66	450	52,550	99%
Gould (Upper)	1	28	39,413	1,408	11,177	1991-92	3,400	48,600	93%
Halls	1	69	615,577	8,921	102,100	1937-38	7,500	86,500	92%
Harrow	1	46	78,498 (2)	1,706	63,400 (2)	1968-69	0	73,400 *	108%
Haven Way	2	13	380	38	(6)	(6)	0	38,000	100%
Hay	1	68	78,132	1,149	18,200	1937-38	1,040	35,960	97%

Appendix B
Sediment Management Matrix
Debris Basin Data (Including 2003-2004 Storm Season)

DEBRIS BASIN	DPA ZONE	NUMBER OF SEASONS	TOTAL DEBRIS DEPOSITED (CU. YDS.)	AVERAGE ANNUAL DEBRIS PRODUCTION (1) (CU. YDS./YR.)	MAXIMUM SEASONAL DEBRIS PRODUCTION CU. YDS.	MAXIMUM SEASONAL DEBRIS PRODUCTION SEASON	ESTIMATED CONDITIONS DEBRIS STORED (CU. YDS.)	ESTIMATED CONDITIONS CAPACITY AVAILABLE CU. YDS.	ESTIMATED CONDITIONS CAPACITY AVAILABLE PERCENT
Hillcrest	1	42	55,259	1,316	11,700	1964-65	4,650	53,350	92%
Hog	1	35	15,114	432	3,900	1977-78	2,520	40,480	94%
Hook East	1	36	47,049 (2)	1,307	40,200 (2)	1968-69	193	25,807	99%
Hook West	1	34	7,498	221	3,600	1979-80	47	36,953	100%
Inverness	2	22	498	23	252	1982-83	700	2,600	79%
Irving Drive	2	30	1,770	59	600	1980-81	10	1,190	99%
Kinneloa	1	40	112,862 (2)	2,822	36,366	1993-94	870	35,130	98%
Kinneloa West	1	38	151,749 (2)	3,993	34,754	1993-94	1,990	33,010	94%
Lannan (9)	1	50	84,767	1,695	18,300	1999-2000	0	41,000	100%
La Tuna	2	49	672,324	13,721	172,100	1977-78	20,400	474,600	96%
Las Flores	1	69	246,554	3,573	36,000	1937-38	2,620	53,380	95%
Las Lomas	1	21	615	29	(6)	(6)	10	17,890	105%
Limekiln	4	41	414,233	10,103	43,610	1994-95	400	171,600	100%
Lincoln	1	69	139,793	2,026	28,400	1968-69	2,483	48,320	127%
Linda Vista	2	34	15,221	448	3,400	1977-78	0	4,460	139%
Little Dalton (9)	1	45	1,217,114	27,047	337,800	1968-69	0	661,000	100%
Maddock	1	50	57,134	1,143	16,200	1980-81	0	45,000	100%
Marston/ Paragon	5	16	130	8	(6)	(6)	270	5,030	95%
May No. 1	2	51	250,024	4,902	45,800	1968-69	0	64,000	100%
May No. 2	2	51	28,406	557	6,200	1966-67	390	12,610	97%
Monument	6	23	3,067	133	2,600	1981-82	300	6,700	96%
Morgan (9)	1	40	35,655	891	12,900	1968-69	0	79,000	100%
Mountbatten	1	21	182	9	(6)	(6)	264	3,036	92%
Mull (9)	1	31	3,170	102	1,100	1979-80	0	13,000	100%
Mullally (9)	1	30	71,570 (4)	2,386	24,400 (4)	1977-78	0	9,400	100%
Nichols	4	67	131,334	1,960	21,800	1951-52	30	13,970	100%
Oak	1	29	13,387	462	6,900	1977-78	130	12,870	99%
Oak Park	1	3	0	NA	NA	NA	0	15,000	100%
Oakglade	1	30	1,657	55	1,200	1977-78	150	14,850	99%
Oakmont View Drive	1	20	668	33	221	1991-92	102	3,298	97%
Oliver	1	15	33,580 (7)	2,239	16,255 (7)	1977-78	1,600	30,400	95%
Pickens	1	69	731,007	10,594	140,600	1977-78	7,500	117,500	94%
Pinelawn	1	31	5,529	178	1,200	1976-77	160	3,040	95%
Rowley	1&7	51	81,170 (4)	1,592	13,000 (4)	1977-78	1,935	41,065	96%
Rowley (Upper)	1	28	54,087 (4)	1,932	31,900 (4)	1977-78	580	28,420	98%
Rubio	1	61	356,373	5,842	133,000	1979-80	0	150,000	100%
Ruby (Lower)	1	49	23,022	470	8,300	1968-69	400	39,600	99%
Rye	5	23	18,404	800	10,000	1981-82	1,900	17,100	90%
Saddleback	5	16	4,020	251	1,060	1995-96	1,120	14,880	93%
Santa Anita (9)	1	45	789,713 (2) (3)	17,549	132,000 (2) (3)	1961-62	23,700	371,300	94%
Sawpit	1	50	701,297 (2) (3)	14,026	232,200 (2) (3)	1968-69	31,800	604,200	95%
Scholl	2	59	20,622	350	3,500	1968-69	465	8,835	95%
Schoolhouse	1	42	34,490	821	21,600	1962-63	5,225	62,775	92%
Schwartz	1	28	52,559	1,877	21,600	1977-78	2,700	42,300	94%
Shields	1	67	134,226 (3)	2,003	7,800	1937-38	1,200	18,800	94%
Sierra Madre Dam (10)	1	77	395,089 (2)	5,131	95,200 (2)	1968-69	4,080	131,920	97%
Sierra Madre Villa	1	47	794,522	16,905	171,775	1993-94	20,100	381,900	95%

Appendix B
Sediment Management Matrix
Debris Basin Data (Including 2003-2004 Storm Season)

DEBRIS BASIN	DPA ZONE	NUMBER OF SEASONS	TOTAL DEBRIS DEPOSITED (CU. YDS.)	AVERAGE ANNUAL DEBRIS PRODUCTION (1) (CU. YDS./YR.)	MAXIMUM SEASONAL DEBRIS PRODUCTION		ESTIMATED CONDITIONS		
							DEBRIS STORED (CU. YDS.)	CAPACITY AVAILABLE	
					CU. YDS.	SEASON		CU. YDS.	PERCENT
Snover	1	68	110,730	1,628	19,300	1938-39	1,250	23,750	95%
Sombrero	1	35	28,735	821	13,500	2000-01	0	88,000	100%
Spinks	1	46	68,622	1,492	15,600	1968-69	2,240	53,760	96%
Starfall	1	31	29,123	939	14,200	1977-78	750	14,250	95%
Stetson	1	35	23,812	680	1,500	1977-78	2,460	38,540	94%
Stough	2	64	169,359	2,646	44,100	1964-65	7,240	173,760	96%
Sturtevant	1	37	1,446	39	500	1977-78	70	1,330	95%
Sullivan	4	34	141,632	4,166	35,300	1979-80	0	51,000	100%
Sunnyside	1	34	4,368	128	1,621	1993-94	204	3,196	94%
Sunset Canyon-Deer	1	22	4,327	197	3,400	1982-83	350	4,650	93%
Sunset (Lower)	1	41	152,630	3,723	20,200	1980-81	7,950	151,050	95%
Sunset (Upper)	1	76	152,110	2,001	27,000	1964-65	960	15,040	94%
Turnbull	6	52	72,952 (2)	1,403	15,900 (2)	1968-69	660	21,340	97%
Upper Shields	1	28	45,232 (4) (7)	1,615	16,900 (4) (7)	1977-78	2,000	38,000	95%
Verdugo	1	69	827,992	12,000	105,400	1937-38	6,550	124,450	95%
Ward	1	48	53,711	1,119	17,800	1977-78	1,040	24,960	96%
West Ravine	1	69	172,564	2,501	29,900	1937-38	50	38,950	100%
Westridge	1&7	30	293	10	(6)	(6)	280	2,120 (11)	88%
Wildwood	3&5	37	106,572	2,880	16,700	1977-78	1,260	19,740	94%
William S. Hart Park	5	21	827	39	600	1983-84	72	2,328	97%
Wilson	2	42	278,963	6,642	62,830	2000-01	0	313,000	100%
Winery	1	36	28,085	780	9,400	1968-69	870	28,130	97%
Zachau	1	48	113,581 (4)	2,366	48,100 (4)	1977-78	2,400	45,600	95%
118 DEBRIS BASINS			**15,799,454**	**316,965**			**246,858**	**7,683,705**	

FOOTNOTES

(1) Volume of debris deposited in basins does not include debris sluiced through open ports or notch.
(2) Volume of debris deposited in basins does not include debris which passed over spillway during the storms in 1968-69 season.
(3) Including debris from upstream basin or dam.
(4) Volume of debris deposited in basins does not include debris which passed over spillway during the storms in 1977-78 season.
(5) Debris capacity available within right of way limits.
(6) No significant debris inflows recorded.
(7) Including debris data from previous basin.
(8) Values are combined with Cooks debris basin.
(9) Special cleanout required due to burned watershed. For Mullally debris basin, it is due to limited storage.
(10) Clean out required when debris reaches or exceeds elevation 1128.9 feet against face of dam.
(11) Based on maximum capacity at spillway level storage capacity.

Appendix B
Sediment Management Matrix
Sediment Placement Sites (SPS) Data

Debris Basin SPSs																
	Name of SPS	Area (Acres)	First Year in Service	Years in Service to Present	Original Capacity (cy)	Estimated Accumulated Sediment (cy)	Average Annual Debris Production (cy)	Estimated Remaining Capacity (cy)	Estimated Remaining Life (yrs) (1)	Existing Permits (Environmental, building code/zoning)	Community Opposition Issues/ History	Location (City, County, USFS, Private)	Is there a concept ultimate fill plan?	Issues Preventing use of capacity	Is the land fee, easement, lease?	Need for stakeholder educational program?
1	Aqua Vista	1.8	1965	39	40,800	28,700	736	12,100	16		YES	City of Los Angeles	YES (86A-D15)		fee	YES
2	Auburn	1.6	1974	30	19,800	15,500	517	4,300	8			City of Sierra Madre	YES (200-D3)		fee	
3	Bailey	3.3			130,800	0	NA	130,800	23	Park Use Permit	YES	City of Sierra Madre	NO	Used as a City Park	fee	YES
4	Browns	19.2	1971	33	405,000	270,800	8,206	134,200	3		YES	City of Los Angeles	NO		fee	YES
5	Dalton	34.4	1965	39	1,637,000	1,637,000	41,974	0	0	RWQCB permit	YES	City of Glendora	NO		fee	YES
6	Dunsmuir	37.5	1952	52	2,029,100	961,700	18,494	1,067,400	58		YES	City of Glendale	YES (5A-D15.1-.4)		fee	YES
7	Eagle	5.9	1958	46	147,000	122,000	2,652	25,000	9		YES	County of Los Angeles	NO		fee	YES
8	Hastings Cayon	8.7	1979	25	211,000	67,600	2,704	143,400	53			City of Pasadena	NO		fee	
9	Hay	42.7			82,800	0	NA	82,800	64			City of La Canada Flintridge	NO	Environmental documents needed	fee	YES
10	La Tuna	61.6	1962	42	3,564,000	57,400	1,367	3,506,600	2566			City of Los Angeles	PLANS MISSING (236-D20, D9)	Requires 404, 401 WQC and 1601 Agreement.	fee	YES
11	Las Flores	1.4			16,500	0	NA	16,500	4			County of Los Angeles	NO	Environmental documents needed	fee	YES
12	Lincoln	26.0	1958	46	270,100	215,600	4,687	54,500	12		YES (5), (6)	County of Los Angeles	YES (37-544.1-.3)		fee	YES
13	Live Oak	10.2	1959	45	296,100	0	0	296,100	47			City of Claremont/County of Los Angeles	NO	Environmental documents needed	fee	YES
14	Maddock	10.1	1956	48	474,300	36,900	769	437,400	569			City of Duarte	YES (159-D13.1-.2)		fee	
15	May	98.4	1959	45	4,971,500	665,000	14,778	4,306,500	291		YES	City of Los Angeles/County of Los Angeles	NO		fee	YES
16	Rubio	3.7	1965	39	61,800	37,200	954	24,600	26			County of Los Angeles	YES (144A-D17)	Environmental documents needed	fee	YES
17	Spinks	21.4	1959	45	1,148,800	304,200	6,760	844,600	125			City of Bradbury	NO		fee	
18	Sunset Lower	6.2			206,000	0	NA	206,000	46	RWQCB Permit		City of Burbank	YES (Sketch)	Requires 404 and 1601 Agreement. We have a RWQCB Permit	fee, easement	YES
19	Sunset Upper	11.3			344,000	0	NA	344,000	132	RWQCB Permit		City of Burbank	YES (Sketch)	Requires 404 and 1601 Agreement. We have a RWQCB Permit	fee	YES
20	Wildwood	9.8	1969	35	77,100	17,300	494	59,800	121			City of Santa Clarita	NO		fee	
21	Zachau	17.5	1955	49	509,400	244,100	4,982	265,300	53		YES	City of Los Angeles	PLANS MISSING (204-D12.1-.5)		fee	YES
Totals					16,642,900	4,681,000	110,073	11,961,900								

Appendix B
Sediment Management Matrix
Sediment Placement Sites (SPS) Data

Reservoir SPSs

	Name of SPS	Area (Acres)	First Year in Service	Years in Service to Present	Original Capacity (cy)	Estimated Accumulated Sediment (cy)	Average Annual Debris Production (cy)	Estimated Remaining Capacity (cy)	Estimated Remaining Life (yrs) (1)	Existing Permits (Environmental, building code/zoning)	Community Opposition Issues/ History	Location (City, County, USFS, Private)	Is there a concept ultimate fill plan?	Issues Preventing use of capacity	Is the land fee, easement, lease?	Need for stakeholder educational program?
1	Sawpit	19.1	1956	48	1,548,000	819,200	17,067	728,800	43		YES	City of Monrovia	PLANS MISSING (196-D19)		fee	YES
2	Maple Cyn.	28.0	1985	19	12,000,000	2,609,400	137,337	9,390,600	68	special use permit (Expires 5/23/2005)		USFS	NO		special use permit	
3	Cogswell (see note 11)	80.0	1991	13	5,600,000	3,069,000	236,077	2,531,000	22	special use permit (Expires 12/31/2020)		USFS	NO		special use permit	
4	Webb	12.5	1970	34	806,000	184,100	5,415	621,900	115		YES	City of Claremont/County of Los Angeles	YES (61-D22.1-.3)	oak trees burned by 2003 Paudua Fire	fee	YES
5	Burro Canyon	150.0	1969	35	47,176,000	17,749,500	507,129	29,426,500	58	special use permit (Expires 2008)		USFS	NO		special use permit	
6	Manning Pit	81.0	1993	11	4,155,000	1,437,600	130,691	2,717,400	21	RWQCB permit	YES (5)	City of Irwindale	YES (16-D74.31)		fee	YES
7	San Dimas	30.0	1967	37	3,349,000	3,349,000	90,514	0	0		YES (5)	City of San Dimas	NO		fee	YES
8	Santa Anita (see note 10)	85.0	1956	48	4,524,000	1,495,300	31,152	3,028,300	97		YES (7), (8)	City of Arcadia/ City of Monrovia	YES (223-D10)	oak trees present	fee	YES
Totals					79,158,000	32,566,700	1,193,997	48,444,500								

Landfills and Dump Sites with Permits or Agreements

	Name of Landfill/Dump Site	Responsible Agency	Type of Fill	Contributing Basins or Reservoirs	Comments
1	Brand Canyon	City of Glendale	Cut and Cover	Brand, Childs, Hillcrest	Will only accept sediment removed near the
2	Calabasas	County Sanitation	Cut and Cover	Dry Canyon South Fork	
3	Deer Canyon	City of Glendale	Land	Deer, Mountbatten, Verdugo	Will only accept sediment removed within city limits.
5	Scholl Canyon	County Sanitation	Cut and Cover	Arbor Dell, Chandler, Scholl, Golf Club Drive, Linda Vista	
6	Starlite Bowl	City of Burbank	Cut and Cover	Elmwood, Stough, Irving Drive, Bracemar, Brace,	Will only accept sediment removed within city limits.
7	Whittier Dump	City of Whittier	Cut and Cover	Fieldbrook, Turnbull, Monument	

Retired / Deactivated SPSs

	Name of SPS	Comments
1	Azusa Western Pit	Agreement was terminated.
2	Big Dalton	Filled to near capacity. Available capacity reserved for cleanouts of adjacent inlet.
3	Big Tujunga	Last used in 1979. USFS Special Use Permit which was issued in 1969 has expired. Only 150,000 cy of capacity is available of the original 5,941,500 cy design capacity. USFS has indicated they intend to use the SPS for recreational purposes.
4	Eaton	Eaton SPS is currently filled in excess of its design capacity.
5	Lannan	Last used in 1974. 30,000 cy of sediment placed, 63,000 cy of storage available. Insufficient cost benefit ratio for continuance of SPS.
6	Malibu Coastal "Charthouse"	Permits were unable to be renewed with the Corps of Engineers and the State Lands Commission after they expired in 1995. Last sediment placed in 1993.
7	Puddingstone Diversion	Being used as San Dimas Spreading Grounds. Never placed material on SPS.
8	Shields	Filled to capacity in 1976. A portion was compacted for building pads. PMD is looking into suitability for La Cresenta Library site.
9	Sierra Madre Villa	Filled to capacity and sold to LACD Parks & Rec. in 1973.
10	West Ravine	Filled to capacity in 1973.
11	Wilbur	Sold to City of LA Parks and Rec. in 1978.

FOOTNOTES:
(1) Estimated remaining life is based on the average annual sediment deposited at the site.
(2) Anticipated to be filled to ultimate capacity following 2003-2004 cleanout.
(3) SPS Expansion may be possible.
(4) Not available for use. Lease of land expired. Requires permits from regulatory agencies.
(5) Resident complaints of SPS activity for dust and/or noise.
(6) Resident complaints of SPS for aesthetics.
(7) Opposition of SPS usage due to presence of oaks and/or sycamores.
(8) Municipality opposes placement of sediment from outside city limit and/or area.
(9) Matrix updated on December 1, 2004
(10) Estimated Remaining Life for Santa Anita SPS is based on the utilization of the center fill area. Water Resources Division staff understand no permits are necessary for using this fill area. Meetings with the City of Arcadia, local residents and stakeholders should be inititiated prior to the placement of sediment in this fill area. This would best be done in conjunction with the next Santa Anita Reservoir cleanout project.
(11) Estimated Remaining Life for Cogwell SPS is based on the average annual debris production rate from 1935 to 1995 which was 72.4 AF/Year.

Appendix B
Sediment Management Matrix
Landfills Data & Temporary Road Maintenance Division Sediment Sites

EPD Landfill Data

Facility	Address/Location	Telephone #	Max. Daily Cap Tons	Avg. Daily Cap Tons	Est. Remaining Cap Million Tons	Est. Remaining Years	Restrictions/Comments	Recycled	Prices
Unclassified Landfill									
Azusa Land Reclamation	1211 W. Gladstone St Azusa, CA 91702	(626) 334-0719	6500	461	27.35	205	None	Yes	Inert debris $21a ton Mixed $15 a ton Clean soil $40 a load
Brand Park	1601 W. Mountain St. Glendale, CA 91206	(818) 548-2000	100	100	0.70	29.16	Usage restricted to City of Glendale Dept. of Public Works only	N/A	N/A
Nu-Way Live Oak Landfill	13620 Live Oak Lane Irwindale, CA 91706	(626) 334-0719	6000	2794	7.00	8.69	None	Yes	(per load) Bobtail $40 Roll-off $50 10 Wheeler $30 Semi-Truck $57
Peck Road Gravel Pit	128 E. Live Oak Ave. Monrovia, CA 91606	(626) 574-1855	1210	131	9.75	258.42	None	Yes	(per load) Pick-up $15 Bobtail $20 10 Wheeler $30 Semi-Truck $40
Reliance Pit #2	16001 Foothill Blvd. Irwindale, CA 91706	(626) 856-6143	6000	735	10.50	59.52	Adjacent to multiple SPS sites. $5 reduction on all loads exceeding $30 if recycled	Yes	Inert/clean soil any size truck $20 Mixed pick up $20 Bobtail $30 10 wheeler $40 Semi $50 a load
Class III Landfill									
Antelope Valley	1200 W. City Ranch Rd. Palmdale, CA 93551	(661) 223-3427	1400	847	9.16	37.55	Odorous soil is buried.	Yes	Clean soil $7.50, if analytical req $20 a ton Mixed $30 a ton
Bradley	9081 Tujunga Ave. Sun Valley, CA 91352	(818) 767-6180	10000	2250	1.13	1.74	None	Yes	$50 for 10 wheeler clean soil Mixed $30 per ton
Burbank	1600 N. Bel Aire Dr. Burbank, CA 91504	(818) 238-3800	240	128	3.5	113.93	Facility restricted to Burbank city crews use only.		N/A
Calabasas	5300 Lost Hills Road Agoura, CA 91301	(818) 991-4435	3500	1166	11	32.75	Limited to Calabasas Watershed use as defined by City ordinance #91-0003		Mixed $26.35 a ton Clean soil $26.35 a ton
Chiquita Canyon	29201 Henry Mayo Dr. Valencia, CA 91355	(661) 257-3655	6000	4779	17.23	12.51	LUP limits waste diposal to 30,000 tons per week. LUP exp. 11/24/2019	Yes	Inert debris $22 a ton Clean soil $55 a ton (not needed but will accept) Mixed $22 a ton
Lancaster	600 E. Ave. "F" Lancaster, CA 9.3535	(661) 726-3468	1700	871	13.85	55.21	LUP expires 8/1/2012 Odorous soil is buried	Yes	Clean soil free of charge, if analytical req $20 a ton Mixed $30 a ton
Pebbly Beach	1 Dump Rd. Avalon, CA 90704	(310) 510-0675	49	14	0.1	21.25	Soil with high rock content is currently being used in roadwork project	Yes	Clean soil no charge, if analytical req $20 a ton Mixed $30 a ton (see comments/restrictions)
Puente Hills	2800 Workman Mill Rd. Whittier, CA 90601	(323) 723-9264	13200	11830	38-?	10	72,000 per week cap. Based on LUP. Imposed restrictions for portions of City of LA	Yes	Clean soil no charge (accepted between hours 9:00-3:00) Mixed $20.88 a ton
San Clemente	San Clemente IslandCA 92135	(619) 556-7260	10	2	0.013	67.7			
Scholl Canyon	7712 N. Figueroa St. Los Angeles, CA 90041	(323) 245-9865	3400	1194	8.2	23.84	For Scholl Canyon Watershed as defined by City of Glendale ordinance #4782. Est. closure 2024.		Clean soil no charge Mixed $30 per ton
Sunshine Canyon	14747 San Fernando Rd Sylmar, CA 91342	(818) 833-6500	6600	5714	8.1	4.92	LUP restriction 36,000 tons weekly. City of LA granted CUP exspansion will provide additional 73 mil tons		N/A
Whittier (Savage Canyon)	13919 E. Penn St. Whittier, CA 90602	(562) 907-7750	350	269	4.85	62.6	Facility restricted to City of Whittier only.		N/A

Appendix B
Sediment Management Matrix
Landfills Data & Temporary Road Maintenance Division Sediment Sites

RMD Temporary Sediment Sites

Location	Site	Latitude	Longitude
RM District 3 RD 339 Yard	Kanan at Tunnel # 2	N 34° 06' 21.1"	W 118° 48' 23.4"
	Mulholland Hwy. At C.M. 20.00	N 34° 06' 20.1"	W 118° 43' 43.0"
	Encinal Cyn. Rd. at C.M. 5.00	N 34° 03' 44.6"	W 118° 52' 27.4"
	Stunt Rd. at C.M. 0.80	N 34° 05' 43.4"	W 118° 39' 09.5"
	Flood Control sub yard		
RM District 3 RD 336 Yard	Malibu Cyn. Rd. at C.M. 2.81	N 34° 03' 17.9"	W 118° 41' 44.3"
	Las Virgenes Cyn. Rd. at C.M. 5.15	N 34° 40' 02.0"	W 118° 07' 32.4"
	Kanan Dume Rd. at C.M. 10.25	N 34° 03' 58.5"	W 118° 48' 33.0"
	Las Flores Heights Rd. at C.M. 0.14	N 34° 03' 44.8"	W 118° 38' 55.5"
Location	**Site**	**State Plane NAD 83, Zone 5 (FT)**	
		Easting	**Northing**
RM District 5 Palmdale	Lake Hughes Road MM 9.50	6393001.17112	2046481.52546
	Lake Hughes Road MM 14.00	6393759.51723	2029514.04357
	San Francisquito Cyn Rd MM 7.89	6423179.13608	2033277.33819
	San Francisquito Cyn Rd MM 6.70	6423418.79480	2038148.85601
	Templin Hwy MM 3.70	6359519.91740	2040536.10870
RM District 1	Glendora Mountain Road MM 11.53	NA	NA
	Glendora Mountain Road MM 10.20	NA	NA
	Glendora Mountain Road MM 9.30	NA	NA
	Glendora Mountain Road MM 6.89	NA	NA
	Glendora Mountain Road MM 5.51	NA	NA
	Glendora Mountain Road 1,000' N/ MM 5.51	NA	NA
	Glendora Mountain Road MM 3.61	NA	NA
	Shoemaker Canyon Road - beyond the locked access gate	NA	NA
	East Fork Road MM 1.38	NA	NA
	Glendora Ridge Road MM 2.21	NA	NA
	Glendora Ridge Road MM 4.79	NA	NA
	Glendora Ridge Road MM 7.78	NA	NA
	Glendora Ridge Road MM 9.10	NA	NA
	Glendora Ridge Road MM 11.20	NA	NA
	Mt. Baldy Road MM 4.06	NA	NA
	Mt. Baldy Road MM 4.33	NA	NA

APPENDIX C

LIST OF SELECTED SPS FACILITIES FOR POTENTIAL BORROW SITES FOR CONSTRUCTION PROJECTS

SPS	Sediment Management Area
Aqua Vista SPS	1
Auburn SPS	2
Browns SPS	3
Dalton SPS	2
Dunsmuir SPS	2
Eagle SPS	2
Eaton SPS	2
Hastings SPS	2
Lincoln SPS	2
Maddock SPS	2
May SPS	2
Rubio SPS	2
San Dimas SPS	2
Santa Anita SPS	2
Sawpit SPS	2
Shields SPS	2
Sierra Madre Villa SPS	2
Spinks SPS	2
Webb SPS	2
West Ravine SPS	2
Wildwood SPS	4
Zachau SPS	2

APPENDIX D

List of Potential Landfills Per Sediment Management Area

Sediment Management Area I (Santa Monica Mountains)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Hanson Aggregates (Livingston-Graham Landfill) 13550 Live Oak Lane Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Stats not available at this time
Puente Hills 2800 Workman Mill Road Whittier, CA 90601	❑ Municipal Solid Waste Landfill ❑ Site subject to close at 10 a.m. ❑ City of LA use prohibited ❑ Soil accepted 9 a.m.- 3 p.m. ❑ No charge for clean soil ❑ Maximum daily capacity 13,200 tpd; estimated daily average 11,900 tpd ❑ Est. remaining years 9	Yes	Clean soil free Analytical $20/ton Mixed $30/ton
Whittier (Savage Canyon) 13919 East Penn Street, Whittier, CA 90602	❑ Municipal Solid Waste Landfill ❑ Open only to residents and businesses of the City of Whittier ❑ No charge for clean soil ❑ Maximum daily capacity 350 tpd; estimated daily average 269 tpd ❑ Est. remaining years 62	Yes	Clean soil free Inert $48.85/load Mixed $50/load
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ Est. remaining years 1	Yes	Clean soil – 10 Wheel $50 Mixed $30/ton

Sediment Management Area I (cont.)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Calabasas 5300 Lost Hills Road Agoura, CA 91301	❑ Municipal Solid Waste Landfill ❑ Restricted to the City of LA and CUA's west of the 405 Fwy and north of Sunset Blvd. Also open cities of Westlake Village, Agoura Hills, Hidden Hills, and Malibu. ❑ Maximum daily capacity 3,500 tpd; estimated daily average 1,166 tpd ❑ Est. remaining years 32	Yes	Inert $26.35/ton Soil $26.35/ton Mixed $26.35/ton
Scholl Canyon 7712 North Figueroa Street, Los Angeles, CA 90041	❑ Municipal Solid Waste Landfill ❑ Restricted to: Altadena, Glendale, La Canada-Flintridge, Pasadena, South Pasadena, Sierra Madre, La Crescenta, and county areas between Pasadena and San Marino and between Arcadia and San Marino ❑ No charge for clean soil ❑ Maximum daily capacity 3,400 tpd; estimated daily average 1,194 tpd ❑ Est. remaining years 23	Yes	Clean soil free Mixed $30/ton
Atkinson Brick Company 13633 South Central Avenue, Los Angeles, CA 90059	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed loads) Flatbed $150 Bobtail $175 10 Wheel $240 Semi $340 (Clean Dirt) Per load Flatbed $98 Bobtail $98 10 Wheel $98 Semi $150

Sediment Management Area II (San Gabriel Mountains)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Azusa Land Reclamation 1211 West Gladstone Street, Azusa, CA 91702	❑ Permitted, considered disposal ❑ Likely will not be reclassified as an inert debris engineered fill operation ❑ Maximum daily capacity 6,500 tpd; estimated daily average 461 tpd ❑ Inert landfill ❑ Est. remaining years 204	Considered disposal by State under AB 939	Clean soil $40/load Mixed $15/ton Inert $21/ton
Hanson Aggregates (Livingston-Graham Landfill) 13550 Live Oak Lane Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Stats not available at this time
Nu-Way Live Oak Landfill 13620 Live Oak Lane Irwindale, CA 91706	❑ Inert landfill ❑ Permitted, considered disposal ❑ In the reclassification process as inert debris engineered fill operation and therefore may not be counted as disposal ❑ Maximum daily capacity 6,000 tpd; estimated daily average 2,794 tpd ❑ Est. remaining years 7 ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Yes	Bobtail $40/load 10 wheeler $30/load Semi $40/load
Peck Road Gravel Pit 128 East Live Oak Avenue, Monrovia, CA 91606	❑ Inert landfill ❑ Permitted, considered disposal ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Maximum daily capacity 1,210 tpd; estimated daily average 131tpd ❑ Est. remaining years 257	Yes	Bobtail $20/load 10 wheeler $30/load Semi $40/load

Sediment Management Area II (cont.)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Puente Hills 2800 Workman Mill Road Whittier, CA 90601	❑ Municipal Solid Waste Landfill ❑ Site subject to close at 10 a.m. ❑ City of LA use prohibited ❑ Soil accepted 9 a.m.- 3 p.m. ❑ No charge for clean soil ❑ Maximum daily capacity 13,200 tpd; estimated daily average 11,900 tpd ❑ Est. remaining years 9	Yes	Clean soil free Analytical $20/ton Mixed $30/ton
Reliance Pit #2 16001 Foothill Boulevard Irwindale, CA 91706	❑ Inert landfill ❑ Permitted, considered disposal ❑ Adjacent to multiple SPS sites ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Maximum daily capacity 6,000 tpd; estimated daily average 735 tpd ❑ Est. remaining years 58	Yes	(Clean soil) Any size truck $20/load (Mixed) Bobtail $30/load 10 wheeler $40/load Semi $50/load
Whittier (Savage Canyon) 13919 East Penn Street, Whittier, CA 90602	❑ Municipal Solid Waste Landfill ❑ Open only to residents and businesses of the City of Whittier ❑ No charge for clean soil ❑ Maximum daily capacity 350 tpd; estimated daily average 269 tpd ❑ Est. remaining years 62	Yes	Clean soil free Inert $48.85/load Mixed $50/load
United Rock (Nu-Way Arrow) 1245 East Arrow Highway, Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed & Dirt) Flatbed $33.50/load Bobtail $45/load 10 Wheel $55/load Semi $62/load

Sediment Management Area II (cont.)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Arcadia Reclamation 12321 Lower Azusa Road, Arcadia, CA 91006	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Bobtail $45/load 10 Wheel $55/load Semi $65/load Bottom Dump $75/load
Chandler's Landfill 26311 Narboone Avenue Rolling Hills Estates, CA 90274	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $70/load Bobtail $75/load 10 Wheel $95/load Semi $125/load
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ No charge for clean soil ❑ Est. remaining years 1	Yes	Clean soil free Mixed $30/ton
Scholl Canyon 7712 North Figueroa Street, Los Angeles, CA 90041	❑ Municipal Solid Waste Landfill ❑ Restricted to: Altadena, Glendale, La Canada-Flintridge, Pasadena, South Pasadena, Sierra Madre, La Crescenta, and county areas between Pasadena and San Marino and between Arcadia and San Marino ❑ No charge for clean soil ❑ Maximum daily capacity 3,400 tpd; estimated daily average 1,194 tpd ❑ Est. remaining years 23	Yes	Clean soil free Mixed $30/ton

Sediment Management Area II (cont.)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Atkinson Brick Co. 13633 South Central Avenue, Los Angeles, CA 90059	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed loads) Flatbed $150 Bobtail $175 10 Wheel $240 Semi $340 (Clean Dirt) Per load Flatbed $98 Bobtail $98 10 Wheel $98 Semi $150
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90
Sunshine Canyon 14747 San Fernando Road, Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton

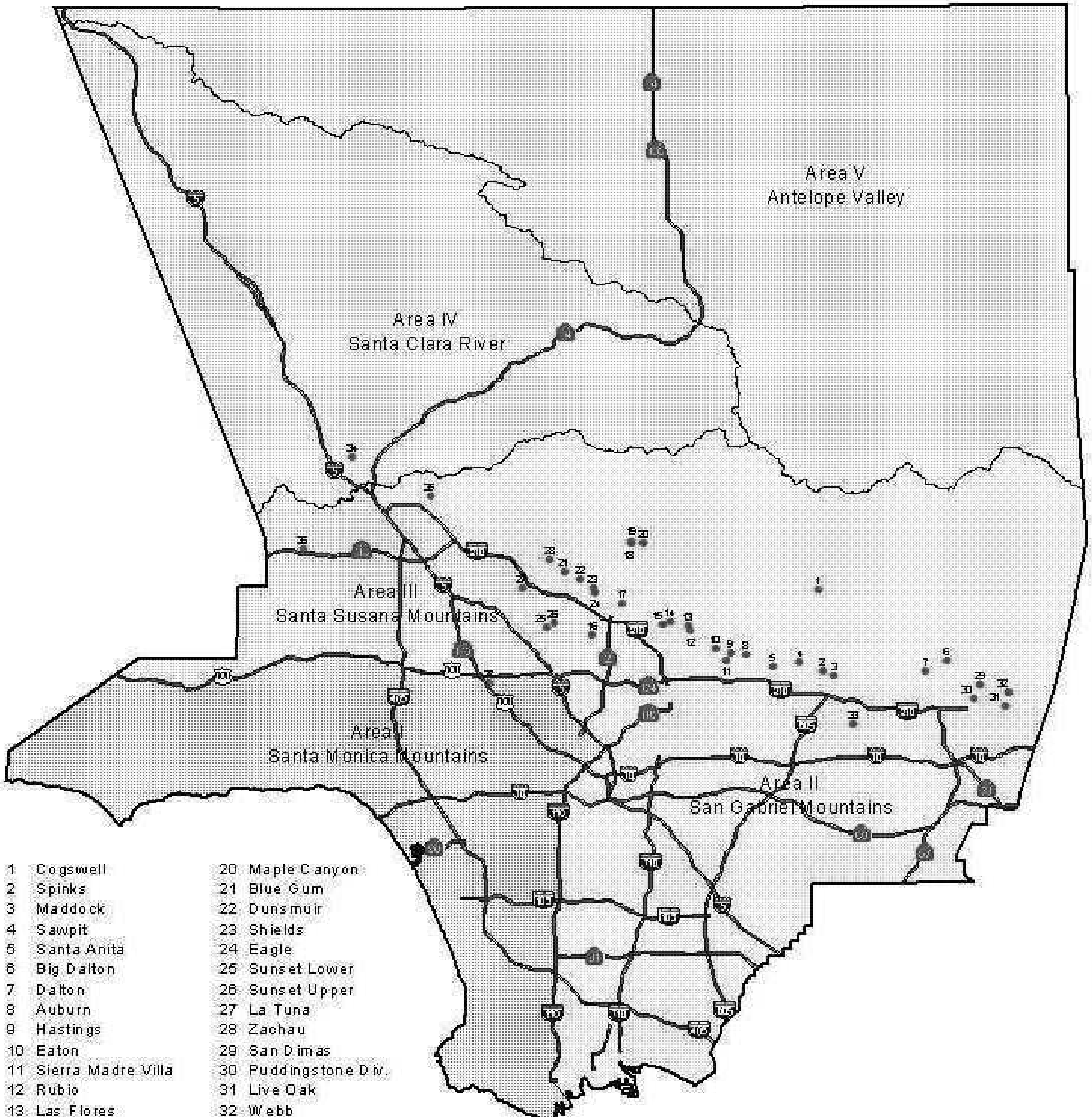
Sediment Area III (Santa Susana Mountains)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ No charge for clean soil ❑ Est. remaining years 1	Yes	Clean soil free Mixed $30/ton
Calabasas 5300 Lost Hills Road Agoura, CA 91301	❑ Municipal Solid Waste Landfill ❑ Restricted to the City of LA and CUA's west of the 405 Fwy and north of Sunset Blvd. Also open cities of Westlake Village, Agoura Hills, Hidden Hills, and Malibu. ❑ Maximum daily capacity 3,500 tpd; estimated daily average 1,166 tpd ❑ Est. remaining years 32	Yes	Inert $26.35/ton Soil $26.35/ton Mixed $26.35/ton
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Scholl Canyon 7712 North Figueroa Street, Los Angeles, CA 90041	❑ Municipal Solid Waste Landfill ❑ Restricted to: Altadena, Glendale, La Canada-Flintridge, Pasadena, South Pasadena, Sierra Madre, La Crescenta, and county areas between Pasadena and San Marino and between Arcadia and San Marino ❑ No charge for clean soil ❑ Maximum daily capacity 3,400 tpd; estimated daily average 1,194 tpd ❑ Est. remaining years 23	Yes	Clean soil free Mixed $30/ton

Sediment Management Area III (cont.)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90
Sunshine Canyon 14747 San Fernando Road, Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton
United Rock (Nu-Way Arrow) 1245 East Arrow Highway, Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed & Dirt) Flatbed $33.50/load Bobtail $45/load 10 Wheel $55/load Semi $62/load
Arcadia Reclamation 12321 Lower Azusa Road, Arcadia, CA 91006	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Bobtail $45/load 10 Wheel $55/load Semi $65/load Bottom Dump $75/load
Chiquita Canyon 29201 Henry Mayo Drive, Valencia, CA 91355	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ Limited to 30,000 tons per week. ❑ LUP exp. 11/24/19 ❑ Maximum daily capacity 6,000 tpd; estimated daily average 4,779 tpd ❑ Est. remaining years 8	Yes	Inert $22/ton Clean Soil $55/ton Mixed $22/ton

Sediment Area IV (Santa Clara River Watershed)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Chiquita Canyon 29201 Henry Mayo Drive Valencia, CA 91355	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ Limited to 30,000 tons per week. ❑ LUP exp. 11/24/19 ❑ Maximum daily capacity 6,000 tpd; estimated daily average 4,779 tpd ❑ Est. remaining years 8	Yes	Inert $22/ton Clean Soil $55/ton Mixed $22/ton
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ No charge for clean soil ❑ Est. remaining years 1	Yes	Clean soil free Mixed $30/ton
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Sunshine Canyon 14747 San Fernando Road, Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton
Antelope Valley 1200 West City Ranch Road, Palmdale, CA 93551	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ All odorous soil is buried ❑ Maximum daily capacity 1,400 tpd; estimated daily average 847 tpd ❑ Est. remaining years 36	Yes	Clean soil $7.5/ton Analytical $20/ton Mixed $30/ton

Sediment Area V (Antelope Valley)			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Antelope Valley 1200 West City Ranch Road, Palmdale, CA 93551	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ All odorous soil is buried ❑ Maximum daily capacity 1,400 tpd; estimated daily average 847 tpd ❑ Est. remaining years 36	Yes	Clean soil $7.5/ton Analytical $20/ton Mixed $30/ton
Lancaster 600 East Avenue "F" Lancaster, CA 93535	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP expires 8/1/12 ❑ Maximum daily capacity 1,700 tpd; estimated daily average 871 tpd ❑ Est. remaining years 54	Yes	Clean soil free Analytical $20/ton Mixed $30/ton

Appendix E
Attachment F06-4a
Sediment Management Areas Location Map



1 Cogswell
2 Spinks
3 Maddock
4 Sawpit
5 Santa Anita
6 Big Dalton
7 Dalton
8 Auburn
9 Hastings
10 Eaton
11 Sierra Madre Villa
12 Rubio
13 Las Flores
14 West Ravine
15 Lincoln
16 Deer
17 Hay
18 Big Tujunga Lower
19 Big Tujunga Upper
20 Maple Canyon
21 Blue Gum
22 Dunsmuir
23 Shields
24 Eagle
25 Sunset Lower
26 Sunset Upper
27 La Tuna
28 Zachau
29 San Dimas
30 Puddingstone Div.
31 Live Oak
32 Webb
33 Manning Pit
34 Wildwood
35 May
36 Brown
37 Aqua Vista

LEGEND

Freeways

Sediment Placement Sites

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Aqua Vista Sediment Placement Site

2003-2004 Storm Season

Location	City of Los Angeles, Along Aqua Vista St, South of the 134 Fwy, East of the 101 Fwy TG 563-A5	***Average annual debris placed in SPS (cubic yds.)***	736
Area (acres)	1.8	***Estimated remaining life (years)***	16
First year in service	1965		
Years in service to present	39	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	40,800		
Estimated volume of sediment in SPS (cubic yds.)	28,700	***Ultimate fill plan***	86A-D15
Remaining fill capacity (cubic yds.)	12,100	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Nichols DB	5.5	21,800	Los Angeles

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. Community opposition.

Needs
1. Deficient (estimated remaining life of 16 years).

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Auburn Sediment Placement Site

2003-2004 Storm Season

Location	City of Sierra Madre, Downstream face of Auburn debris basin on Auburn Ave TG 567-A1	***Average annual debris placed in SPS (cubic yds.)***	517
Area (acres)	1.6	***Estimated remaining life (years)***	8
First year in service	1974		
Years in service to present	30	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	19,800		
Estimated volume of sediment in SPS (cubic yds.)	15,500	***Ultimate fill plan***	DWG 200-D3
Remaining fill capacity (cubic yds.)	4,300	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Carter DB	0.8	12,600	Sierra Madre
Auburn DB	0.1	20,100	Sierra Madre
Bailey DB	1.0	91,000	Sierra Madre
Sunnyside DB	2.1	1,621	Pasadena
Carriage House DB	2.1	3,400	Pasadena
Ranchtop DREI	2.1	none available	Pasadena
Sierra Madre Dam/DB	1.4	95,200	Sierra Madre
Sturtevant DB	1.7	500	Sierra Madre

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Hastings SPS	2.2	143,400
Bailey SPS	0.6	130,800
Eaton SPS	4.0	0
Sierra Madre Villa SPS	2.8	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Debris capacity very small.
2. Hauling through Sierra Madre and Pasadena difficulties.
3. Site is to small to stage placment operations (i.e. no turn around).
4. Site can only handle small volumes.

Needs

1. An alternative sediment management facilitiy to meet our needs.
2. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Bailey Sediment Placement Site

2003-2004 Storm Season

Location	City of Sierra Madre, Intersection of Carter and Grove, Downstream face of Bailey debris basin TG 566-J1	***Average annual debris placed in SPS (cubic yds.)***	0
Area (acres)	3.3	***Estimated remaining life (years)***	0
First year in service	Never been used		
Years in service to present	0	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	130,800		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	130,800	***R/W type***	Fee
Permits	Park Use Permit	***Last year active?***	Used as a park

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Carter DB	1.0	12,600	Sierra Madre
Auburn DB	0.7	20,100	Sierra Madre
Bailey DB	0.1	91,000	Sierra Madre
Sunnyside DB	1.3	1,621	Pasadena
Carriage House DB	1.3	3,400	Pasadena
Ranchtop DREI	1.4	none available	Pasadena
Sierra Madre Dam/DB	2.1	95,200	Sierra Madre
Sturtevant DB	2.0	500	Sierra Madre

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Hastings SPS	1.5	143,400
Auburn SPS	0.6	4,300
Eaton SPS	3.5	0
Sierra Madre Villa SPS	2.8	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. Currently used as a park.
2. Hauling through Sierra Madre and Pasadena difficulties.
3. Residential objections to removal of park.
4. Site currently considered inactive.

Needs
1. Abandon the park site to make use of SPS without causing public outcry.
2. Possible acquisition of portion of large adjacent vacant land (APN 5761-002-008).
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN
Facility Information Sheet for Big Dalton Sediment Placement Site
2003-2004 Storm Season

Location	Approximately ½ mile downstream of Big Dalton Dam on the West side of Big Dalton Canyon Road	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	20.12	***Estimated remaining life (years)***	0
First year in service	1972		
Years in service to present	32	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	Unknown		
Estimated volume of sediment in SPS (cubic yds.)	SPS is filled to capacity	***Ultimate fill plan***	52-T38
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee
Permits	None	***Last year active?***	2002

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Big Dalton Reservoir	0.7	19,000	Glendora
Big Dalton DB	1.4	296,700	Glendora
Little Dalton DB	1.8	337,800	Glendora
Englewild DB	3.6	60,200	Glendora
Gordon DB	3.9	3,800	Glendora
Mull DB	4.2	1,100	Glendora
Morgan DB	4.3	12,900	Glendora
Crescent Glen DB	4.2	N/A	Glendora
Oak Park DB	4.0	N/A	Glendora
Harrow DB	3.8	63,400	Glendora
Pennsylvania DRI	4.2	N/A	Glendora
Westridge DB	4.4	0	Glendora
Hook East DB	5.3	40,200	Glendora
Hook West DB	5.1	3,600	Glendora
Beatty DB	5.9	7,600	Azusa

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Dalton SPS	1.9	0
San Dimas SPS	8.0	0
Manning Pit SPS	10.1	2,720,000
Puddingstone Diversion SPS	7.3	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. SPS is currently filled to capacity.
2. Hauling through Glendora difficulties.
3. There is no other SPS with any capacity in the area.

Needs
1. Possible acquisition of adjacent vacant land to increase capacity.
2. Possible removal of existing sediment to another site or to a private entity.
3. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Big Tujunga Upper & Lower Sediment Placement Site

2003-2004 Storm Season

Location	Approximately ½ mile downstream of Big Tujunga Dam off Big Tujunga Canyon Road in US National Forest TG 4645-D6	***Average annual debris placed in SPS (cubic yds.)***	263,250
Area (acres)	87.9	***Estimated remaining life (years)***	0.0
First year in service	1981		
Years in service to present	23	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	5,941,500		
Estimated volume of sediment in SPS (cubic yds.)	5,791,500	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	150,000	***R/W type***	Fee
Permits	No	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Big Tujunga Reservoir	0.5	213,000	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Maple Canyon SPS	3.2	9,390,600

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Special Use Permit expired, USFS desires to use this SPS as a recreational site.

Needs

1. The SPS will soon be full and Maple Canyon will serve as Big Tujunga Dam's SPS.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Browns Sediment Placement Site

2003-2004 Storm Season

Location	City of Los Angeles, North of the 118 Fwy and West of Browns Canyon Rd TG 500-B1	***Average annual debris placed in SPS (cubic yds.)***	8,206
Area (acres)	19.2	***Estimated remaining life (years)***	3
First year in service	1971		
Years in service to present	33	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	405,000		
Estimated volume of sediment in SPS (cubic yds.)	270,800	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	134,200	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Aliso DB	4.0	52,206	Los Angeles
Limekiln DB	3.2	43,610	Los Angeles

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)*** *	***Available fill capacity (cubic yds.)***
Wilbur SPS	5.6	0

* haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required

** potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS

Issues

1. Community opposition.
2. There is no concept for an ultimate fill plan.

Needs

1. Deficient (estimated remaining life of 3 years).

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Burro Sediment Placement Site

2003-2004 Storm Season

Location	Approximately 1 mile East of the intersection of Highway 39 and East Fork Road on East Fork Road	***Average annual debris placed in SPS (cubic yds.)***	507,129
Area (acres)	80	***Estimated remaining life (years)***	58
First year in service	1969		
Years in service to present	35	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	47,176,000		
Estimated volume of sediment in SPS (cubic yds.)	17,749,500	***Ultimate fill plan***	Yes
Remaining fill capacity (cubic yds.)	29,426,500	***R/W type***	Special Use Permit
Permits	USFS Special Use Permit	***Last year active?***	2004

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Cogswell Reservoir	10.3	150,000	Unincorporated
San Gabriel Reservoir	4.5	800,000	Unincorporated
Morris Reservoir	8.0	104,000	Unincorporated
Road Department	varies	~8,000	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Cogswell SPS	10.3	2,531,000

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Located several miles from another potential SPS.
2. Special Use Permit restricts our operations.
3. Located many miles from other potential debris sources.
4. Currently will be filled by 2008 for cleanout of San Gabriel Dam.

Needs

1. This site should only serve San Gabriel Reservoir & Road Department.
2. Possible enlargement of SPS to accommodate San Gabriel Reservoirs needs for the next 20 years.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Cogswell Sediment Placement Site

2003-2004 Storm Season

Location	Right bank of Cogswell Reservoir TG 508-B5	***Average annual debris placed in SPS (cubic yds.)***	236,077
Area (acres)	80	***Estimated remaining life (years)***	22 (See Note 1)
First year in service	1991		
Years in service to present	13	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	5,600,000		
Estimated volume of sediment in SPS (cubic yds.)	3,069,000	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	2,531,000	***R/W type***	Special Use Permit
Permits	USFS Special Use Permit	***Last year active?***	

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Cogswell Reservoir	0.4	150,000	Unincorporated
San Gabriel Reservoir	14.2	800,000	Unincorporated
Morris Reservoir	14.8	104,000	Unincorporated

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Burro SPS	10.3	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Located several miles from another potential SPS.
2. Special Use Permit restricts our operations.
3. Located many miles from other potential debris sources.
4. One lane road to site is difficult for two way traffic.

Needs

1. This site should only serve Cogswell Reservoir.
2. Possible enlargement of SPS to accommodate Cogswell Reservoirs needs for the next 20 years.

Note

1. Estimated remaining life for Cogswell SPS is based on the average annual debris production rate from 1935 to 1995 which was 72.4 AF/year.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Dalton Sediment Placement Site

2003-2004 Storm Season

Location	South side of Little Dalton debris basin TG 569-H2	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	34.4	***Estimated remaining life (years)***	0
First year in service	1965		
Years in service to present	39	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	1,637,000		
Estimated volume of sediment in SPS (cubic yds.)	SPS is filled to capacity	***Ultimate fill plan***	13-D158
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee
Permits	None	***Last year active?***	2004

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Big Dalton Reservoir	2.8	19,000	Glendora
Big Dalton DB	0.6	296,700	Glendora
Little Dalton DB	0.3	337,800	Glendora
Englewild DB	2.4	60,200	Glendora
Gordon DB	2.7	3,800	Glendora
Mull DB	2.9	1,100	Glendora
Morgan DB	3.0	12,900	Glendora
Crescent Glen DB	3.0	N/A	Glendora
Oak Park DB	2.8	N/A	Glendora
Harrow DB	2.5	63,400	Glendora
Pennsylvania DRI	3.0	N/A	Glendora
Westridge DB	3.1	0	Glendora
Hook East DB	4.0	40,200	Glendora
Hook West DB	3.8	3,600	Glendora
Beatty DB	4.7	7,600	Azusa

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Dalton SPS	1.6	0
San Dimas SPS	6.8	0
Manning Pit SPS	8.9	2,720,000
Puddingstone Diversion SPS	6.0	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. SPS is currently being filled to capacity with the cleanout of Big Dalton Reservoir.
2. Hauling through Glendora difficulties.
3. There is no other SPS with any capacity in the area.

Needs

1. Need to establish another SPS in the area away from residential areas.
2. Possible removal of existing sediment to another site or to a private entity.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Dunsmuir Sediment Placement Site

2003-2004 Storm Season

Location	City of Glendale, North of intersection of Dunsmore and Markridge, West of Dunsmuir debris basin TG 504-E5	***Average annual debris placed in SPS (cubic yds.)***	18,494
Area (acres)	37.5	***Estimated remaining life (years)***	58
First year in service	1952		
Years in service to present	52	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	2,029,100		
Estimated volume of sediment in SPS (cubic yds.)	961,700	***Ultimate fill plan***	5A-D15.1-4
Remaining fill capacity (cubic yds.)	1,067,400	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Pinelawn DB	2.2	1,200	Unincorporated
Oak DB	1.3	6,900	Unincorporated
Ward DB	1.3	17,800	Unincorporated
Cloud Creek DB	2.2	1,800	Unincorporated
Starfall DB	2.2	14,200	Unincorporated
Upper Shields DB	2.3	16,900	Unincorporated
Shields DB	1.8	7,800	Unincorporated
Eagle Canyon DB	2.0	41,700	Unincorporated
Blue Gum DB	2.1	19,100	Los Angeles
Blanchard DB	1.8	36,600	Los Angeles
Cooks M-1 DB	1.8	N/A	Glendale
Cooks DB	1.3	61,200	Glendale
Dunsmuir DB	0.2	86,200	Glendale

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Shields SPS	2.2	0
Eagle SPS	2.2	25,000
Zachau SPS	3.7	265,300
Deer SPS	5.0	Unknown

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. This is the only SPS in the area with significant capacity.
2. There is community opposition to operation of the SPS.

Needs

1. Need to work with residents/City to insure continued opeartion of facility through 2024.
2. Develop an interim plan until the need is met.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Eagle Sediment Placement Site

2003-2004 Storm Season

Location	Northwest corner of the intersection of La Crescenta and Harmony Pl, Upstream of Eagle debris basin in unincorporated La Crescenta area TG 504-G6	***Average annual debris placed in SPS (cubic yds.)***	2,652
Area (acres)	5.9	***Estimated remaining life (years)***	9
First year in service	1958		
Years in service to present	46	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	147,000		
Estimated volume of sediment in SPS (cubic yds.)	122,000	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	25,000	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Pinelawn DB	1.0	1,200	Unincorporated
Oak DB	1.1	6,900	Unincorporated
Ward DB	1.1	17,800	Unincorporated
Cloud Creek DB	1.0	1,800	Unincorporated
Starfall DB	1.0	14,200	Unincorporated
Upper Shields DB	1.0	16,900	Unincorporated
Shields DB	0.3	7,800	Unincorporated
Eagle Canyon DB	0.2	41,700	Unincorporated
Mullally DB	3.8	24,400	La Canada Flintridge
Childs DB	2.7	10,700	La Canada Flintridge
Snover Canyon DB	3.1	19,300	La Canada Flintridge
Pickens DB	2.0	140,600	Unincorporated
Oakmont View DB	2.5	221	Glendale
Deer Canyon DB	2.9	44,200	Glendale
Verdugo DB	3.8	105,400	Glendale

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Shields SPS	0.3	0
Dunsmuir SPS	2.0	1,067,400
Deer SPS	3.6	Unknown

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Capacity is small compared to need.
2. The facility is surrounded by homes and there may be opposition to operations.

Needs

1. Due to its proximity to Dunsmuir SPS this facility should be filled and abandoned.
2. Develop an interim plan until the SPS is filled to capacity.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Eaton Sediment Placement Site

2003-2004 Storm Season

Location	City of Pasadena, Cul-de-sac of Eaton Canyon Road TG 536-E7	***Average annual debris placed in SPS (cubic yds.)***	5,521
Area (acres)	10.5	***Estimated remaining life (years)***	0
First year in service	1969		
Years in service to present	35	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	108,200		
Estimated volume of sediment in SPS (cubic yds.)	187,700	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee, Easement
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Kinneloa East DB	1.3	36,366	Pasadena
Kinneloa West DB	1.3	34,754	Pasadena
Kinclair Upper DRI	1.4	N/A	Pasadena
Kinclair Lower DRI	1.4	N/A	Pasadena
Sierra Madre Villa DB	1.9	171,775	Pasadena
Eaton Reservoir	0.6	56,000	Pasadena

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Sierra Madre Villa SPS	1.7	0
Rubio SPS	3.4	24,600
Santa Anita SPS	5.6	3,028,300
Las Flores SPS	3.9	16,500

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Currently filled to capacity and used as a shooting range.
2. Hauling through Pasadena difficulties.
3. Site currently considered inactive.

Needs

1. Possible expansion of the SPS into the adjacent Eaton Canyon Park already owned by the County.
2. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Hastings Sediment Placement Site

2003-2004 Storm Season

Location	City of Pasadena, Ranchtop Road downstream of Ranchtop DRI TG 537-H7	***Average annual debris placed in SPS (cubic yds.)***	2,704
Area (acres)	8.7	***Estimated remaining life (years)***	53
First year in service	1979		
Years in service to present	25	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	211,000		
Estimated volume of sediment in SPS (cubic yds.)	67,600	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.	143,400	***R/W type***	Fee
Permits	No	***Last year active?***	2004

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Ranchtop DRI	0.2	N/A	Pasadena
Carriage House DB	0.7	3,400	Pasadena
Sunnyside DB	0.9	1,621	Pasadena
Sierra Madre Villa DB	0.6	171,775	Pasadena
Kinneloa West DB	3.7	36,366	Pasadena
Kinneloa East DB	3.6	34,754	Pasadena
Kinclair Upper DB	3.8	N/A	Pasadena
Kinclair Lower DB	3.8	N/A	Pasadena

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Sierra Madre Villa SPS	0.7	0
Eaton SPS	3.1	0
Auburn SPS	1.8	4,300
Bailey SPS	1.6	130,800

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Hauling through Pasadena difficulties.
2. This SPS is currently the only viable SPS in the Pasadena and Sierra Madre areas.

Needs

1. Possible removal of existing material by permittee to increase capacity.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN
Facility Information Sheet for Hay Sediment Placement Site
2003-2004 Storm Season

Location	City of La Canada Flintridge, Northern terminus of La Canada Boulevard downstream of Hay debris basin TG 535-A1	***Average annual debris placed in SPS (cubic yds.)***	0
Area (acres)	42.7	***Estimated remaining life (years)***	64
First year in service	Unknown		
Years in service to present	Unknown	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	82,800		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	82,800	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Winery DB	0.9	9,400	La Canada Flintridge
Hay DB	0.2	18,200	La Canada Flintridge
Bigbriar DB	1.3	866	La Canada Flintridge
Gould Upper DB	2.0	11,177	La Canada Flintridge
Gould DB	1.4	18,000	La Canada Flintridge
Paradise Canyon DB	2.6	N/A	La Canada Flintridge
Childs DB	2.2	10,700	La Canada Flintridge
Snover Canyon DB	2.6	19,300	La Canada Flintridge
Pickens DB	3.3	140,600	Unincorporated
Oakmont View DB	4.4	221	Glendale
Deer Canyon DB	5.8	44,200	Glendale
Verdugo DB	4.13	105,400	Glendale

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Lincoln SPS	6.5	54,500
Deer SPS	4.7	Unknown
Eagle SPS	4.4	25,000

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. Capacity is small compared to need.
2. Environmental documents are needed to operate the facility.

Needs
1. Need to address the environmental document concern.
2. Expand the SPS into the adjacent vacant parcel owned by LACFCD (APN 5864-010-906).
3. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for La Tuna Sediment Placement Site

2003-2004 Storm Season

Location	City of Los Angeles, North of La Tuna Canyon Road TG 503-F6	***Average annual debris placed in SPS (cubic yds.)***	1,367
Area (acres)	61.6	***Estimated remaining life (years)***	2,566
First year in service	1962		
Years in service to present	42	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	3,564,000		
Estimated volume of sediment in SPS (cubic yds.)	57,400	***Ultimate fill plan***	236-D20, D9 (missing)
Remaining fill capacity (cubic yds.)	3,506,600	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Chandler DB	4.3	0	Los Angeles
La Tuna DB	0.2	172,100	Los Angeles

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Sunset Lower SPS	8.9	206,000
Zachau SPS	8.1	265,300

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Plans are missing.
2. May fall under the upcoming Air Quality Management District's Fugitive Dust Rule 403 (beginning January 1, 2005).

Needs

1. Environmental documents needed (require 404, 401, WQC and 1601 Agreements).

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Las Flores Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated Altadena area, Downstream of Las Flores debris basin TG 536-B4	***Average annual debris placed in SPS (cubic yds.)***	0
Area (acres)	1.4	***Estimated remaining life (years)***	4
First year in service	Unknown		
Years in service to present	Unknown	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	16,500		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	16,500	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Las Flores DB	0.2	36,000	Unincorporated
Rubio DB	0.5	133,000	Unincorporated
Gooseberry DB	0.9	1,027	Unincorporated
Devonwood DB	1.0	5,800	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Rubio SPS	0.5	24,600
West Ravine SPS	2.0	0
Lincoln SPS	2.2	54,500
Eaton SPS	4.2	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Currently classified as an inactive SPS.
2. The site has a very small capacity.
3. Narrow curvy streets in the area would make hauling difficult.

Needs

1. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Lincoln Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated Altadena area, East of the intersection of Lincoln and Alta Loma, East of Lincoln debris basin TG 535-G4	***Average annual debris placed in SPS (cubic yds.)***	4791
Area (acres)	26.0	***Estimated remaining life (years)***	11
First year in service	1958		
Years in service to present	46	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	270,100		
Estimated volume of sediment in SPS (cubic yds.	215,600	***Ultimate fill plan***	37-544.1-.3
Remaining fill capacity (cubic yds.)	54,500	***R/W type***	Fee
Permits	None	***Last year active?***	2002

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Devonwood DB	1.9	5,800	Unincorporated
Fair Oaks DB	1.1	15,700	Unincorporated
Lincoln DB	0.2	28,400	Unincorporated
Fern DB	0.7	23,900	Unincorporated
West Ravine DB	0.9	29,900	Unincorporated
Devil's Gate Reservoir	2.6	146,000	Pasadena
Inverness DB	4.2	252	Pasadena
Chamberlain DB	4.4	300	Pasadena
Afton DRI	4.3	N/A	Pasadena
Las Flores DB	2.1	36,000	Unincorporated
Rubio DB	2.7	133,000	Unincorporated
Gooseberry DB	3.3	1,027	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)**** *	***Available fill capacity (cubic yds.)***
West Ravine SPS	0.9	0
Las Flores SPS	2.1	16,500
Rubio SPS	2.8	24,600
Hay SPS	6.5	82,800

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Many complaints from residents of adjacent La Vina development.
2. Recent construction of horse trail staging area will make hauling operations more difficult.
(i.e. the access road is now one way)

Needs

1. Increase capacity by removing sediment or selling to private entity.
2. Possible expansion of the SPS back into the canyon.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Live Oak Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated Claremont area, North of Baseline and West of Live Oak DRI TG 570-J7	***Average annual debris placed in SPS (cubic yds.)***	N/A
Area (acres)	10.2	***Estimated remaining life (years)***	47
First year in service	1959		
Years in service to present	45	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	296,100		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	296,100	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Live Oak DRI	0.2	N/A	Unincorporated
Marshall Canyon DRI	2.2	N/A	La Verne
Emerald East DB	1.9	1,800	La Verne
Emerald West DRI	1.9	N/A	La Verne
Live Oak Reservoir	1.4	5,500	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Puddingstone Diversion SPS	4.0	0
San Dimas SPS	4.2	0
Quarry Pits @ LA/SB County Borders	3.2	millions

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Currently considered an inactive SPS.

Needs

1. Need to ascertain why this facility has never been utilized (has some oak trees in canyon bottom).
2. If possible activate the faciity so that it can accept sediment for the region.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Maddock Sediment Placement Site

2003-2004 Storm Season

Location	City of Duarte, Western terminus of Sunnydale Drive, Downstream of Maddock debris basin TG 568-D3	***Average annual debris placed in SPS (cubic yds.)***	785
Area (acres)	10.1	***Estimated remaining life (years)***	569
First year in service	1956		
Years in service to present	48	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	474,300		
Estimated volume of sediment in SPS (cubic yds.)	36,900	***Ultimate fill plan***	159-D13.1-.2
Remaining fill capacity (cubic yds.)	437,400	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Maddock DB	0.2	16,200	Duarte
Crestview DB	0.8	N/A	Duarte
Cedarwood DRI	0.7	N/A	Duarte
Las Lomas DB	0.7	N/A	Duarte
Spinks DB	2.4	70,200	Bradbury
Bradbury DB	2.8	15,600	Bradbury

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	**Distance (miles)***	**Available fill capacity (cubic yds.)**
Spinks SPS	2.5	844,600
Sawpit SPS	5.3	728,500
Manning Pit SPS	5.9	2,717,400

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Homes now surround this site and complaints may come about once operations commence.
2. Access to the SPS is via residential streets.

Needs

1. This site should be reserved for the maintenance of the 4 DB's in the Duarte area.

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Manning Pit Sediment Placement Site

2003-2004 Storm Season

Location	City of Irwindale, Approximately 400 feet South of intersection of Vincent and Arrow off Vincent TG 598-G3	***Average annual debris placed in SPS (cubic yds.)***	130,691
Area (acres)	81	***Estimated remaining life (years)***	21
First year in service	1993		
Years in service to present	11	***Is SPS deficient (remaining life < 20 years)?***	***No***
Original fill capacity (cubic yds.)	4,155,000		
Estimated volume of sediment in SPS (cubic yds.)	1,437,600	***Ultimate fill plan***	16-D74.1-.3
Remaining fill capacity (cubic yds.)	2,717,400	***R/W type***	Fee
Permits	None	***Last year active?***	2004

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Beatty DB	4.8	7,600	Azusa
Hook West DB	6.5	3,600	Glendora
Hook East DB	6.7	40,200	Glendora
Westridge DB	6.7	N/A	Glendora
Pennsylvania DRI	7.0	N/A	Glendora
Mull DB	8.7	1,100	Glendora
Harrow DB	8.0	63,400	Glendora
Englewild DB	8.5	60,200	Glendora
Little Dalton DB	9.1	337,800	Glendora
Big Dalton DB	9.2	296,700	Glendora
Gordon DB	8.7	3,800	Glendora
Morgan DB	8.9	12,900	Glendora
Oak Park DB	8.8	N/A	Glendora
Crescent Glen DB	8.9	N/A	Glendora

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Maddock SPS	5.9	437,400
Spinks SPS	7.9	844,600
Dalton SPS	9.1	0
Big Dalton SPS	10.4	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. SPS will be filled at a faster rate as more and more SPS's become full.
2. Hauling through Irwindale difficulties.
3. This SPS is a great distance from the debris producing facilities.

Needs

1. Coordinate with the City of Irwindale fill their north side of the pit to expand capacity (it was sold to them).
2. Place sediment to construct a second ramp into the basin making placement of sediment easier/quicker.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Maple Canyon Sediment Placement Site

2003-2004 Storm Season

Location	Approximately ½ due South of Big Tujunga Dam off Big Tunujnga Canyon Road in US National Forest TG 4645-D6	***Average annual debris placed in SPS (cubic yds.)***	***137,337***
Area (acres)	28	***Estimated remaining life (years)***	68
First year in service	1985		
Years in service to present	19	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	12,000,000		
Estimated volume of sediment in SPS (cubic yds.)	2,609,400	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	9,390,600	***R/W type***	Special Use Permit
Permits	USFS Special Use Permit Exp 5/05	***Last year active?***	Unknown

Potential debris sources*

Contributing debris basin (DB) and reservoirs	***Approximate haul route* (miles)***	***Historic maximum annual debris production (cubic yds.)***	***City***
Big Tujunga Reservoir	3.4	213,000	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities*

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Big Tujunga Upper & Lower SPS's	2.8	150,000

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. This SPS is to remote to make use of for any other debris producing facility other than Big Tujunga Dam.

Needs

1. Need to extend the USFS special use permit to beyond 2024 to gaurantee continued operation.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for May Sediment Placement Site

2003-2004 Storm Season

Location	City of Los Angeles, Intersection of Fenton and Almetz next to Olive View Medical Center TG 482-B1	***Average annual debris placed in SPS (cubic yds.)***	14,778
Area (acres)	98.4	***Estimated remaining life (years)***	285
First year in service	1959		
Years in service to present	45	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	4,971,500		
Estimated volume of sediment in SPS (cubic yds.)	665,000	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	4,306,500	***R/W type***	Fee
Permits	None	***Last year active?***	2004

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Sombrero DB	2.9	13,500	Unincorporated
Stetson DB	3.0	1,500	Los Angeles
Hog DB	3.2	3,900	Unincorporated
School House DB	1.7	21,600	Los Angeles
Wilson DB	1.6	62,830	Los Angeles
May #1 DB	1.5	45,800	Unincorporated
May #2 DB	1.2	6,200	Los Angeles
Pacoima Reservoir	4.4	92,000	Unincorporated
Schwartz DB	8.9	21,600	Los Angeles
Oliver DB	8.7	16,255	Los Angeles
Cassara DB	8.2	16,800	Los Angeles

Distance between SPS and other adjacent potential sediment management facilities

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
La Tuna SPS	11.8	3,506,600
Zachau SPS	11.9	265,300
Wildwood SPS	10.8	59,800

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Community opposition/complaints.
2. May require environmental documents to conduct operations.

Needs

1. Need to address the environmental document concern.
2. Need to address resident complaints and work out a compromise to ensure continued operations.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Puddingstone Diversion Sediment Placement Site

2003-2004 Storm Season

Location	City of San Dimas, Approximately 400 feet downstream of Puddingstone Diversion Dam TG 570-D6	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	36	***Estimated remaining life (years)***	Unknown
First year in service	Never been used		
Years in service to present	0	***Is SPS deficient (remaining life < 20 years)?***	***No***
Original fill capacity (cubic yds.)	unknown		
Estimated volume of sediment in SPS (cubic yds.)	SPS is being used as a spreading grounds	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	unknown	***R/W type***	Fee
Permits	None	***Last year active?***	Never been used

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	*Approximate haul route (miles)**	*Historic maximum annual debris production (cubic yds.)*	*City*
San Dimas Reservoir	2.8	51,000	San Dimas
Emerald East DB	2.7	1,800	LaVerne
Emerald West DRI	2.7	N/A	LaVerne
Marshall Canyon DRI	3.0	N/A	LaVerne
Oak Park DB	3.2	N/A	Glendora
Crescent Glen DB	3.4	N/A	Glendora
Live Oak DRI	3.8	N/A	Claremont
Gordon DB	4.4	3,800	Glendora
Morgan DB	3.7	12,900	Glendora
Mull DB	4.4	1,100	Glendora
Elwood Upper DRI	4.5	N/A	Glendora
Elwood Lower DRI	4.2	N/A	Glendora

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	*Distance (miles)**	*Available fill capacity (cubic yds.)*
Dalton SPS	5.3	0
San Dimas SPS	1.3	0
Webb SPS	4.9	625,000
Live Oak SPS	3.6	296,100

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. SPS is currently utilized as a spreading grounds.
2. Site is surrounded by residential areas and building a large dirt pile in the middle may pose a problem.
3. There is no other SPS with any capacity within 3.5 miles.

Needs
1. Need to determine if the spreading grounds is needed more than an SPS.
2. Possible conversion back to an SPS.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Rubio Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated Altadena area, Downstream of Rubio debris basin TG 536-B4	***Average annual debris placed in SPS (cubic yds.)***	954
Area (acres)	3.7	***Estimated remaining life (years)***	26
First year in service	1965		
Years in service to present	39	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	61,800		
Estimated volume of sediment in SPS (cubic yds.	37,200	***Ultimate fill plan***	144A-D17
Remaining fill capacity (cubic yds.)	24,600	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Las Flores DB	0.6	36,000	Unincorporated
Rubio DB	0.2	133,000	Unincorporated
Gooseberry DB	0.5	1,027	Unincorporated
Devonwood DB	1.6	5,800	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Las Flores SPS	0.5	16,500
West Ravine SPS	2.8	0
Lincoln SPS	3.1	54,500
Eaton SPS	3.8	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Currently classified as an inactive SPS.
2. The site has a very small capacity.
3. Narrow curvy streets in the area would make hauling difficult.

Needs

1. Develop an interim plan until need is addressed.

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for San Dimas Sediment Placement Site

2003-2004 Storm Season

Location	City of San Dimas, Intersection of San Dimas Canyon Road and Golden Hills TG 570-F4	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	30	***Estimated remaining life (years)***	0
First year in service	1967		
Years in service to present	37	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	Unknown		
Estimated volume of sediment in SPS (cubic yds.)	SPS is filled to capacity	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee
Permits	None	***Last year active?***	2004

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
San Dimas Reservoir	1.6	51,000	San Dimas
Live Oak Reservoir	5.4	5,500	Claremont
Marshall Canyon DRI	2.5	N/A	LaVerne
Emerald East DB	3.3	1,800	LaVerne
Emerald West DRI	2.5	N/A	LaVerne
Live Oak DRI	4.4	N/A	Claremont
Oak Park DB	4.3	N/A	Glendora
Crescent Glen DB	4.5	N/A	Glendora
Gordon DB	5.2	3,800	Glendora
Morgan DB	4.5	12,900	Glendora
Mull DB	5.3	1,100	Glendora

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Webb SPS	5.4	625,000
Live Oak SPS	4.1	296,100
Puddingstone Diversion SPS	1.5	0
Dalton SPS	6.9	0
Big Dalton SPS	8.6	0

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. SPS will be filled after cleanout of San Dimas Reservoir is complete.
2. Hauling through San Dimas difficulties.
3. This SPS is the only active SPS within 5 miles.

Needs

1. Have a private contractor remove sediment in order to increase capacity.
2. Work with the City to allow for maintenance of the SPS.
3. Develop an interim plan until need is addressed.

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DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Santa Anita Sediment Placement Site

2003-2004 Storm Season

Location	City of Arcadia, Downstream of Santa Anita debris basin on East side of Santa Anita spreading grounds TG 567-E2	***Average auual debris placed in SPS (cubic yds.)***	31,152
Area (acres)	***85***	***Estimated remaining life (years)***	97
First year in service	1956		
Years in service to present	48	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	4,524,000		
Estimated volume of sediment in SPS (cubic yds.)	1,495,300	***Ultimate fill plan***	223-D10
Remaining fill capacity (cubic yds.)	3,028,700	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Santa Anita Reservoir	3.4	53,000	Arcadia
Santa Anita DB	0.7	132,000	Arcadia
Lannan DB	1.3	18,300	Arcadia
Sierra Madre DB	3.0	95,200	Sierra Madre
Carter DB	3.0	12,600	Sierra Madre
Auburn DB	3.1	20,100	Sierra Madre
Bailey DB	3.3	91,000	Sierra Madre
Sunnyside DB	4.1	1,621	Pasadena
Carriage House DB	4.1	3,400	Pasadena
Ranchtop DRI	4.1	N/A	Pasadena
Sturtevant DB	2.0	500	Sierra Madre
Sturtevant DB	varies	~8,000	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Sawpit SPS	5.4	728,500
Bailey SPS	3.1	130,800
Auburn SPS	3.0	4,300

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues
1. Use of SPS questioned due to the presence of oak trees at the site.
2. City of Arcadia opposed to having sediment from outside of City deposited at Site.
3. Problems with hauling through the City of Arcadia.

Needs
1. Have the ability to make use of the SPS for facilities outside of Arcadia such as Sierra Madre and Pasadena.
2. Work with the City to establish an accepted haul route.
3. Solve issue with respect to the oak trees at the site, possible remediation if necessary.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Sawpit Sediment Placement Site

2003-2004 Storm Season

Location	City of Monrovia, Downstream of Sawpit Debris Basin on Canyon Boulevard TG 567-H2	***Average annual debris placed in SPS (cubic yds.)***	17,067
Area (acres)	19.1	***Estimated remaining life (years)***	43
First year in service	1956		
Years in service to present	48	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	1,548,000		
Estimated volume of sediment in SPS (cubic yds.)	819,200	***Ultimate fill plan***	196-D19
Remaining fill capacity (cubic yds.)	728,800	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

*Potential debris sources****

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Sawpit DB	0.3	232,200	Monrovia
Oakglade DB	1.4	1,200	Monrovia
Ruby Lower DB	1.0	8,300	Monrovia
Buena Vista DB	1.7	400	Monrovia

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Santa Anita SPS	4.9	3,028,300
Spinks SPS	3.2	844,600

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Currently have problems with residents whose property abuts the SPS.
2. Hauling through Monrovia difficulties.

Needs

1. The SPS should serve only those facilities in the Monrovia Area.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Shields Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated area of La Crescenta, Intersection of Alta and La Crescenta	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	5.93	***Estimated remaining life (years)***	0
First year in service	Unknown		
Years in service to present	Unknown	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	Unknown		
Estimated volume of sediment in SPS (cubic yds.)	SPS is filled to capacity	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee
Permits	None	***Last year active?***	1976

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Shields DB	0.1	7,800	Unincorporated
Upper Shields DB	1.0	16,900	Unincorporated
Ward DB	1.0	17,800	Glendale
Pinelawn DB	1.0	1,200	Unincorporated
Cloud Creek DB	1.0	1,800	Unincorporated
Starfall DB	0.9	14,200	Unincorporated
Eagle Canyon DB	0.5	41,700	Unincorporated
Mullally DB	3.8	24,400	La Canada Flintridge
Snover Canyon DB	3.2	19,300	La Canada Flintridge
Childs DB	2.7	10,700	La Canada Flintridge
Pickens DB	1.9	140,600	Unincorporated
Oak Creek DB	1.0	6,900	Unincorporated

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Eagle SPS	0.5	0
Hay SPS	4.9	82,800
Blue Gum SPS	3.4	0
Dunsmuir SPS	2.0	1,067,400

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Filled to capacity and PMD is looking at the site as a possible location for a library.
2. There would be conflicts with our operations and the adjacent property owners.

Needs

1. The SPS should be abandonned due to its small capacity and its proximity to Dunsmuir which has a large capacity.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Sierra Madre Villa Sediment Placement Site

2003-2004 Storm Season

Location	Downstream of Sierra Madre Villa debris basin, Currently used as a golf course	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	2.93	***Estimated remaining life (years)***	0
First year in service	Unknown		
Years in service to present	Unknown	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	Unknown		
Estimated volume of sediment in SPS (cubic yds.)	Unknown	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	0	***R/W type***	Sold to LA County Parks & Recreation in 1973
Permits	None	***Last year active?***	1973

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Sierra Madre Villa DB	0.1	171,775	Pasadena

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles) ****	***Available fill capacity (cubic yds.)***
Hastings SPS	0.6	143,400
Eaton SPS	1.7	0
Bailey SPS	2.4	130,800
Auburn SPS	2.7	4,300

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. The SPS property has been sold and no longer under LACFCD control.
2. This SPS has a small capacity compared to what the debris basin can produce so it might not be advantageous to reacquire the land.

Needs

1. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Spinks Sediment Placement Site

2003-2004 Storm Season

Location	City of Bradbury, Between Bradbury and Spinks debris basin off the flood control access road TG 568-B3	***Average annual debris placed in SPS (cubic yds.)***	6,760
Area (acres)	21.4	***Estimated remaining life (years)***	125
First year in service	1959		
Years in service to present	45	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	1,148,800		
Estimated volume of sediment in SPS (cubic yds.)	304,200	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	844,600	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Bradbury DB	0.2	70,200	Bradbury
Spinks DB	0.3	15,600	Bradbury

Distance between SPS and other adjacent potential sediment management facilities*

Potential SPS/facility	***Distance (miles)*** *	***Available fill capacity (cubic yds.)***
Maddock SPS	3.0	844,600
Sawpit SPS	3.2	728,500

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Access to site is over private streets and a hauling operation would not be permitted.
2. SPS only serves adjacent Spinks and Bradbury DB's.

Needs

1. This site should be reserved for the maintenance of the 2 DB's in the Bradbury area.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Sunset Lower Sediment Placement Site

2003-2004 Storm Season

Location	City of Burbank, Northeast of N Sunset Canyon Drive TG 533-J5	***Average annual debris placed in SPS (cubic yds.)***	0
Area (acres)	6.2	***Estimated remaining life (years)***	46
First year in service	N/A		
Years in service to present	N/A	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	206,000		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	Yes (sketch)
Remaining fill capacity (cubic yds.)	206,000	***R/W type***	Fee, Easement
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Elmwood DB	1.4	16,100	Burbank
Stough DB	1.3	44,100	Burbank
Sunset Canyon-Deer DB	0.6	3,400	Burbank
Sunset Lower DB	0.3	20,200	Burbank
Sunset Upper DB	1.0	27,000	Burbank

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)*** *	***Available fill capacity (cubic yds.)***
Sunset Upper SPS	0.7	344,000

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. SPS property is a combined fee and easement.
2. There is a blue line stream in SPS.

Needs

1. Environmental documents needed (require 404 and 1601 Agreements). We have a permit with the RWQCB.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Sunset Upper Sediment Placement Site

2003-2004 Storm Season

Location	City of Burbank, South of Wildwood Canyon Park and East of Country Club Drive TG 534-A4	***Average annual debris placed in SPS (cubic yds.)***	0
Area (acres)	11.3	***Estimated remaining life (years)***	132
First year in service	N/A		
Years in service to present	N/A	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	344,000		
Estimated volume of sediment in SPS (cubic yds.)	0	***Ultimate fill plan***	Yes (sketch)
Remaining fill capacity (cubic yds.)	344,000	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Elmwood DB	2.2	16,100	Burbank
Stough DB	2.1	44,100	Burbank
Sunset Canyon-Deer DB	0.3	3,400	Burbank
Sunset Lower DB	0.3	20,200	Burbank
Sunset Upper DB	0.3	27,000	Burbank

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Sunset Lower SPS	0.7	206,000

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. There is a blue line stream in SPS.

Needs

1. Environmental documents needed (require 404 and 1601 Agreements). We have a RWQCB permit.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Webb Sediment Placement Site

2003-2004 Storm Season

Location	Unincorporated Claremont area, On Webb Canyon Road, North of Baseline and downstream of Live Oak Dam TG 571-A5	***Average annual debris placed in SPS (cubic yds.)***	5,415
Area (acres)	12.5	***Estimated remaining life (years)***	115
First year in service	1970		
Years in service to present	34	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	806,000		
Estimated volume of sediment in SPS (cubic yds.)	184,100	***Ultimate fill plan***	61-D22.1-.3
Remaining fill capacity (cubic yds.)	625,000	***R/W type***	Fee
Permits	None	***Last year active?***	2003

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Live Oak DRI	1.5	N/A	Unincorporated
Marshall Canyon DRI	3.4	N/A	La Verne
Emerald East DB	3.2	1,800	La Verne
Emerald West DRI	3.1	N/A	La Verne
Thompson Creek Reservoir	4.4	N/A	Claremont
Live Oak Reservoir	0.4	153,000	Unincorporated

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Puddingstone Diversion SPS	5.4	0
San Dimas SPS	6.2	0
Live Oak SPS	1.4	296,100
Quary Pits @ LA/SB County Borders	4.0	millions

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. This SPS is on a narrow roadway that may make hauling operations difficult.
2. Hauling through Claremont difficulties.
3. This is the only viable SPS in the Claremont area.
4. Presence of oak trees in SPS.

Needs

1. This SPS could be expanded to increase capacity into the adjacent vacant parcels (APN 8669-012-005).
2. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for West Ravine Sediment Placement Site

2003-2004 Storm Season

Location	About 1500 feet North of Loma Alta on Chaney Trail on the North side of West Ravine debris basin	***Average annual debris placed in SPS (cubic yds.)***	Unknown
Area (acres)	2.4	***Estimated remaining life (years)***	0
First year in service	Unknown		
Years in service to present	Unknown	***Is SPS deficient (remaining life < 20 years)?***	**Yes**
Original fill capacity (cubic yds.)	Unknown		
Estimated volume of sediment in SPS (cubic yds.)	SPS is filled to capacity	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	0	***R/W type***	Fee
Permits	None	***Last year active?***	1973

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Devonwood DB	1.7	5,800	Unincorporated
Fair Oaks DB	0.9	15,700	Unincorporated
Lincoln DB	1.0	28,400	Unincorporated
Fern DB	0.3	23,900	Unincorporated
West Ravine DB	0.1	29,900	Unincorporated
Devil's Gate Reservoir	3.4	1,671,000	Pasadena
Inverness DB	5.1	252	Pasadena
Chamberlain DB	5.1	300	Pasadena
Afton DRI	5.1	N/A	Pasadena
Las Flores DB	2.0	36,000	Unincorporated
Rubio DB	2.6	133,000	Unincorporated
Gooseberry DB	3.0	1,027	Unincorporated

Distance between SPS and other adjacent potential sediment management facilities

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Lincoln SPS	0.9	54,500
Las Flores SPS	1.9	16,500
Rubio SPS	2.6	24,600
Hay SPS	7.2	82,800

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. The SPS is filled to capacity and hasn't been used since 1973.
2. Narrow road to the site could pose problems for hauling debris.
3. Adjacent homeowners have complained about operations in the debris basins near the SPS.

Needs

1. Increase capacity by removing sediment or selling to private entity.
2. Possible expansion of the SPS to the west side of Chaney Trail on 40 acre parcel (APN 5830-018-003).
3. Develop an interim plan until need is addressed.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Wildwood Sediment Placement Site

2003-2004 Storm Season

Location	City of Santa Clarita, East of Calgrove Blvd and South of Lyons Ave TG 4640-J3	***Average annual debris placed in SPS (cubic yds.)***	494
Area (acres)	9.8	***Estimated remaining life (years)***	121
First year in service	1969		
Years in service to present	35	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	77,100		
Estimated volume of sediment in SPS (cubic yds.)	17,300	***Ultimate fill plan***	No
Remaining fill capacity (cubic yds.)	59,800	***R/W type***	Fee
Permits	None	***Last year active?***	Unknown

Potential debris sources**

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Crocker DB	7.2	5,745	Santa Clarita
Marston/Paragon DB	7.4	0	Santa Clarita
Rye DB	8.1	10,000	Unincorporated
Saddleback DB	10.4	1,060	Unincorporated
Wildwood DB	0.7	16,700	Santa Clarita
William S. Hart DB	0.7	600	Santa Clarita

Distance between SPS and other adjacent potential sediment management facilities**

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
May SPS	9.7	4,307,600

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. There is no concept for an ultimate fill plan.

Appendix F

DPW SEDIMENT MANAGEMENT STRATEGIC PLAN

Facility Information Sheet for Zachau Sediment Placement Site

2003-2004 Storm Season

Location	City of Los Angeles, At cul-de-sac of Cardamine Court downstream of Zachau debris basin TG 503-J2	***Average annual debris placed in SPS (cubic yds.)***	4,982
Area (acres)	17.5	***Estimated remaining life (years)***	52
First year in service	1955		
Years in service to present	49	***Is SPS deficient (remaining life < 20 years)?***	**No**
Original fill capacity (cubic yds.)	509,400		
Estimated volume of sediment in SPS (cubic yds.)	244,100	***Ultimate fill plan***	204-D12.1-.5
Remaining fill capacity (cubic yds.)	265,300	***R/W type***	Fee
Permits	No	***Last year active?***	Unknown

*Potential debris sources***

Contributing debris basin (DB) and reservoirs	***Approximate haul route (miles)****	***Historic maximum annual debris production (cubic yds.)***	***City***
Zachau DB	0.2	48,100	Los Angeles
Denivelle DB	0.9	5,500	Los Angeles
Rowley DB	0.9	13,000	Los Angeles
Upper Rowley DB	1.5	31,900	Los Angeles

*Distance between SPS and other adjacent potential sediment management facilities***

Potential SPS/facility	***Distance (miles)****	***Available fill capacity (cubic yds.)***
Blue Gum SPS	2.0	0
Dunsmuir SPS	3.5	1,067,400

* Haul routes are the shortest possible distance between DB and SPS and may be through residential areas. Other routing options maybe required.

** Potential debris sources and other potential management facilities are based on two factors: that the potential sources are within the same jurisdiction as and a reasonable distance away from the DB, reservoir, or SPS.

Issues

1. Community opposition to the operation of the SPS.
2. New tract of homes being built in the immediate vicinity of SPS.

APPENDIX G

Sediment Management Area List of Flood and debris control facilities

Sediment Management Area 1 – Santa Monica Mountains	
Debris Retaining Inlets	Agoura Road No. 1, Agoura Road No. 2, Agoura Road No. 3, Avenida Cumbre, Avenida Cumbre Term, Balcony, Calle Canon No. 1, Calle Canon No. 2, Fastwater, Hazel Nut, Mendenhall, PD 1848 - Line A, PD 1848 - Line B, Snowpeak, Three Springs, Torchwood, and Via Esquina
Debris Basins	Cloudcroft, Dry Canyon–South Fork, Nichols, and Sullivan
Sediment Placement Sites	Aqua Vista
Sediment Management Area 2 – San Gabriel Mountains	
Debris Retaining Inlets	Altadena Golf Club, Black Stallion, Blevins, Broken Bit, Cedarwood, Dancy, Deepsprings, Diamond Bar Village, Diamond Crest, El Selinda, Elwood Lower, Elwood Upper, Emerald West, Glencove, Gun Tree East, Gun Tree West, Harbor Boulevard, Hastings/Ridgeview, Kara, Kinclair Lower, Kinclair Upper, Klum, Lansdowne, Live Oak, Marshall Canyon, Martingail, Meandering Creek, Oak Meadow, Oak Valley, Palomino East, Palomino North, Palomino West, Pantera, Pathfinder Road, Pennsylvania, Pumello Lower, Pumello Upper, Quail East, Ranch Top, Thelma, Trigger Lane, Vantage Pointe, and Windrose.
Debris Basins	Auburn, Bailey, Beatty, Big Briar, Big Dalton, Blanchard, Blue Gum, Bradbury, Buena Vista, Carriage House, Carter, Cassara, Cloud Creek, Cooks, Cooks M-1A, Crescent Glen, Crestview, Denivelle, Devonwood, Dunsmuir, Eagle Canyon, Emerald East, Englewild, Fair Oaks, Fern, Fieldbrook, Gooseberry, Gordon, Gould, Gould Upper, Halls Canyon, Harrow, Hay, Hog, Hook East, Hook West, Kinneloa East, Kinneloa West, Lannan, Las Flores, Las Lomas, Lincoln, Little Dalton, Maddock, May No. 1, May No. 2, Monument, Morgan, Mull, Mullally, Oak Creek, Oak Park, Oakglade, Oliver, Pickens, Pinelawn, Rowley, Rubio, Ruby (Lower), Santa Anita, Sawpit, Schoolhouse, Schwartz, Shields, Sierra Madre Dam, Sierra Madre Villa, Snover, Sombrero, Spinks, Starfall, Stetson, Sturtevant, Sunnyside, Turnbull, Upper Rowley, Upper Shields, Ward, West Ravine, Westridge, Wilson Canyon, Winery, and Zachau
Sediment Placement Sites	**Active:** Auburn, Burro Canyon, Cogswell, Dalton, Dunsmuir, Eagle, Hastings Canyon, Lincoln, Maddock, Manning Pit, Maple Canyon, May, Rubio, San Dimas, Santa Anita, Sawpit, Spinks, Webb, and Zachau **Inactive:** Bailey, Hay, Live Oak, Las Flores **Retired:** Big Dalton, Big Tujunga, Eaton, Puddingstone Diversion, Shields, Sierra Madre Villa, and West Ravine

Appendix G (cont.)

Sediment Management Area 2 – San Gabriel Mountains	
Sediment Placement Sites	**Active:** Auburn, Burro Canyon, Cogswell, Dalton, Dunsmuir, Eagle, Hastings Canyon, Lincoln, Maddock, Manning Pit, Maple Canyon, May, Rubio, San Dimas, Santa Anita, Sawpit, Spinks, Webb, and Zachau **Inactive:** Bailey, Hay, Live Oak, Las Flores **Retired:** Big Dalton, Big Tujunga, Eaton, Puddingstone Diversion, Shields, Sierra Madre Villa, and West Ravine
Reservoirs	Big Dalton, Big Tujunga, Cogswell, Devil's Gate, Eaton Wash, Live Oak, Morris, Pacoima, Puddingstone Diversion, San Dimas, San Gabriel, Santa Anita, Sawpit, and Thompson Creek
Sediment Management Area 3 – Santa Susana Mountains	
Debris Retaining Inlets	Afton, Ayars, Bridgewater, Estrella, Garrett, Kimberly #1, Kimberly #2, Kimberly #3, Las Virgenes Line "H", Lindero, Luna, Malibu, Montana Lower, Narcisa, Oakmont View, Parkville, Pilar, Ridgebrook, Rollingridge, Sonrisa, Tenneyson, and Wilbur
Debris Basins	Aliso, Arbor Dell, Brace, Bracemar, Brand, Chamberlain, Chandler, Childs, Deer Canyon, Elmwood, Golf Club Drive, Haven Way, Hillcrest, Inverness, Irving Drive, La Tuna, Limekiln, Linda Vista, Mountbatten, Oakmont View Drive, Scholl, Stough, Sunset Canyon – Deer, Sunset Lower, Sunset Upper, and Verdugo
Sediment Placement Sites	**Active:** Browns **Inactive:** La Tuna, Sunset Lower, and Sunset Upper

Appendix G (cont.)

Sediment Management Area 4 – Santa Clara River	
Debris Retaining Inlets	Angela Yvonne, Anne Freda, Banyan, Bayberry, Beryl, Bonsai, Byron, Camino Canyon, Canyon End No. 1, Canyon End No. 2, Cascade No. 1, Cascade No. 2, Chuckwagon, Copper Hill Line B-1, Corsica, Crystal Springs No. 2, Curassow, Doug, Firebrand No. 1, Firebrand No. 2, Firebrand No. 3, Gary, Gelding, Gelding Terminus, Georgia Lane, Gibraltar, Green Hill No. 2, Greenwood No. 1, Greenwood No. 2, Greenwood No. 3, Haskell Canyon, Hazel, Jasmine, June Rose No. 1, June Rose No. 2, June Rose No. 3, June Rose No. 4, June Rose No. 5, Kathleen, Kavenaugh, Lapine, Laurel, Mammoth Colorado No. 2, Mammoth No. 1, Mammoth No. 3, Marilyn, Mauch, Meadow Grass No. 4, Meadow Grass No. 5, Meadow Grass No. 6, Minaret, Monterey, MTD 1384 Basin No. 1, MTD 1384 Basin No. 2, Natalie Way, Neff, Oak Springs, Old Friend, Oleander, Palomino No. 1, Palomino No. 2, Park Vista No. 1, Park Vista No. 2, Park Vista No. 3, PD 1788 - Line E Lower, PD 1788 - Line E Upper, PD 2050, PD 2051, PD 2147 Basin No. 2, PD 2176 Line B, PD 2431 Line A, PD 2431 Line A-13, PD 2431 Line A-15, PD 2431 Line A-3, PD 2431 Line A-5, PD 2431 Line B, PD 2431 Line E Lower, PD 2431 Line E Upper, Poe B26, Poe B31, Poppy 1, Poppy 2, Poppy 3, Prairie, Project 9102, Quail Valley Basin No. 2, Quail Valley Terminus, Rainbow Glen, Ron Ridge, Saddleback No. 1, Saddleback No. 2, Saddleback No. 3, Saddleback No. 4, Sam, Shakespeare No. 1, Shakespeare No. 2, Shakespeare No. 3, Sierra, Silver Saddles, Sloan Canyon, Sorrento, Star Canyon, Summerhill, Sunrose, Sweetwater, Technology A, Technology B, Technology B1, Technology D, Tulipland, Villa Canyon, Wander Way, Wildwind, Wistaria, Woodland, and Wordsworth
Debris Basins	Crocker, Marston/Paragon, Rye, Saddleback, Wildwood, and William S. Hart Park
Sediment Placement Sites	Wildwood

Note: There are no reservoirs, debris retaining inlets, debris basins, or sediment placement sites in Sediment Management Area V – Antelope Valley.

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 2

Identify Projected Sediment Management Needs

November 2005

Sediment Management Strategic Plan – Strategy 2 Report
County of Los Angeles Department of Public Works

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EXECUTIVE SUMMARY

Introduction

The objective of Strategy 2 is to identify Public Works' projected sediment management needs for the next 20 years. This was accomplished through three action steps. In Action Step 2.1, a methodology was developed for determining Public Works' projected sediment management demands within the Los Angeles County Flood Control District's (LACFCD) boundaries for the next 20 years. Using this methodology, in Action Step 2.2, it was determined that approximately two million cubic yards of capacity will be needed to meet the sediment management needs for the next 50 years. The analysis was extended to a 50-year time interval to size the SPSs for the sediment produced in a Design Debris Event (DDE) as well as the average annual sediment production from the future and existing debris control facilities. A DDE is a 50-year frequency storm over a four-year old burn occurring in the watershed. Action Step 2.3 identified new practices and policies to meet these sediment management demands established in Action Step 2.2. In order to address the large amount of sediment storage capacity needed, it is recommended that a policy be developed requiring developers to contribute fees towards the establishment of regional SPSs.

Background

In October 2003, Flood Maintenance and Water Resources Divisions (WRD) were given the MAPP goal of developing a strategy and action plan to address Public Works' sediment management responsibilities at all County roads and for all reservoirs, debris basins, sediment retaining inlets, and SPSs to maintain flood control protection and access for the residents of LACFCD. Administration approved developing a sediment management strategic plan with oversight from the Steering Committee in order to implement its four strategies:

- Strategy 1: Identifies Public Works' current sediment management practices, issues, and deficiencies.

- Strategy 2: Identifies Public Works' projected sediment management needs, including anticipated future development within the LACFCD for the next 20 years and recommends follow-up activities to address this issue.

- Strategy 3: Examines alternatives to meet Public Works' sediment management needs for the next 20 years.

- Strategy 4: Develops an implementation plan for the first five years of the sediment management strategic plan's recommended tasks to meet Public Works' sediment management needs for the next 20 years.

This report summarizes the findings and recommendations from Strategy 2.

Key Recommendations

The following are the key recommendations resulting from the findings of Action Steps 2.1, 2.2, and 2.3:

1. Authorize WRD to program conducting field reconnaissance activities and evaluate the cost and feasibility of establishing new regional SPSs in the Santa Clara River area with an approximate total storage capacity of two million cubic yards.

2. Authorize the Sediment Management Strategic Plan work group to develop a fee schedule to fund establishment of SPSs in the Santa Clara River area to accommodate debris production from new development projects. Also, authorize the workgroup to identify the approval process needed for implementation of a fee schedule.

3. Authorize WRD to program selection and evaluation of potential SPSs to address deficiencies in the Santa Monica and Santa Susana Mountains Sediment Management areas.

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN
ACTION STEP 2.1

Methodology for Determining Projected Sediment Demands

Strategy 2 identifies Public Works' projected sediment management needs for the next 20 years. Action Step 2.1 develops a methodology for determining Public Works' projected sediment management demands within the Los Angeles County Flood Control District's (LACFCD) boundaries for the next 20 years.

Water Resources Division researched and developed an approach to determine Public Works' projected sediment management demands for new development within the LACFCD. The following approach is based on development information obtained from the County of Los Angeles Department of Regional Planning, Southern California Association of Governments (SCAG), California Department of Finance, and drainage system engineering reports approved by Public Works' Land Development Division (LDD) for new developments.

1. Review a sampling of LDD's approved drainage concepts for new developments.

2. Categorize the new developments (tracts) by Sediment Management Area (SMA) to obtain representative development projects within each SMA. The five SMAs are the Santa Monica Mountains, San Gabriel Mountains, Santa Susana Mountains, Santa Clara River, and Antelope Valley. Using the drainage concepts of each representative development project, quantify the total Design Debris Event (DDE) capacity volume of the development's debris control facilities per total acreage of development area. In addition, tabulation will be made of each tract's total development area and number of housing units.

3. Generate:

   a. A Sediment Management Storage Rating Factor correlating the total DDE volume of debris control facilities per acre of development.
   b. The Housing Unit Rating Factor, which is the ratio of the total tract area in acres divided by the total number of housing units.

4. Consult LDD, SCAG, California Department of Finance, and Regional Planning to obtain the projected number of housing units to be built annually over the next 20 years. Apply the Housing Unit Rating Factor to the total number of projected housing units to calculate an approximate area (in acres) of development for the next 20 years. Determine the area of expected development for each SMA.

5. Apply the Sediment Management Storage Rating Factor to the expected development area for each SMA to obtain values of expected sediment production within each SMA.

6. For each SMA, combine the SMAs expected sediment production with its current sediment production. Compare these values to the current available volume of sediment placement site storage within the SMA.

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN
ACTION STEP 2.2

Projected Sediment Demands

Strategy 2 identifies Public Works' projected sediment management needs for the next 20 years. Action Step 2.2 utilizes the methodology developed in Action Step 2.1 to project the sediment management demands within the Los Angeles County Flood Control District's (LACFCD) boundaries and provide recommendations. For the establishment of new SPSs in the Santa Clara River region, the analysis is extended to a 50-year time interval because flood control facilities are typically constructed for a 50-year life span.

Water Resources Division (WRD) obtained a sampling of drainage concepts approved by Land Development Division (LDD) for new development projects. These indicate that, on average, approximately 14 cubic yards of sediment management capacity is generated for every acre of development. Table 1 summarizes these findings.

Table 1
Volume of Sediment Management Demand
Generated by Development Projects in
Various Areas within the Los Angeles County Flood Control District

Sample Development Project	Development Project's Sediment Management Area	Total Storage Capacity of Project's Sediment Retention Facilities (CY)	Project's Developed Area (AC)	Sediment Retention Storage per Project Area (CY/AC)
1 - TR 52419	Santa Clara River	3,682	320	12
2 - MTD 1739	San Gabriel River	1,772	640	3
3 - MTD 1684	Santa Clara River	2,404	176	14
4 - TR 53425	Santa Clara River	2,437	477	5
5 - TR 53108	Santa Clara River	4,890	527	9
6 - TR 61105	Santa Clara River	17,529	630	28
7 - MTD 1697	Santa Clara River	9,262	437	21
8 - TR 49240	Antelope Valley	6,473	289	22
			Average	**14**

WRD contacted LDD, the County of Los Angeles Department of Regional Planning, the Southern California Association of Governments (SCAG), and the California Department of Finance to obtain information on the acreage of expected future development and average number of housing units to be built each year within the County of Los Angeles for the next 20 years. Regional Planning provided general information on a sampling of approved, recorded, pending, and inactive developments within the portion of the Santa Clara River Area (Figure 1) where new development within the LACFCD will primarily take place. Based on recent development trends and discussions with these groups, 2,500 housing units are projected to be built annually over the next 20 years in the Santa Clara River area.

Figure 1
Map Showing Proposed New Developments in Santa Clara River Area

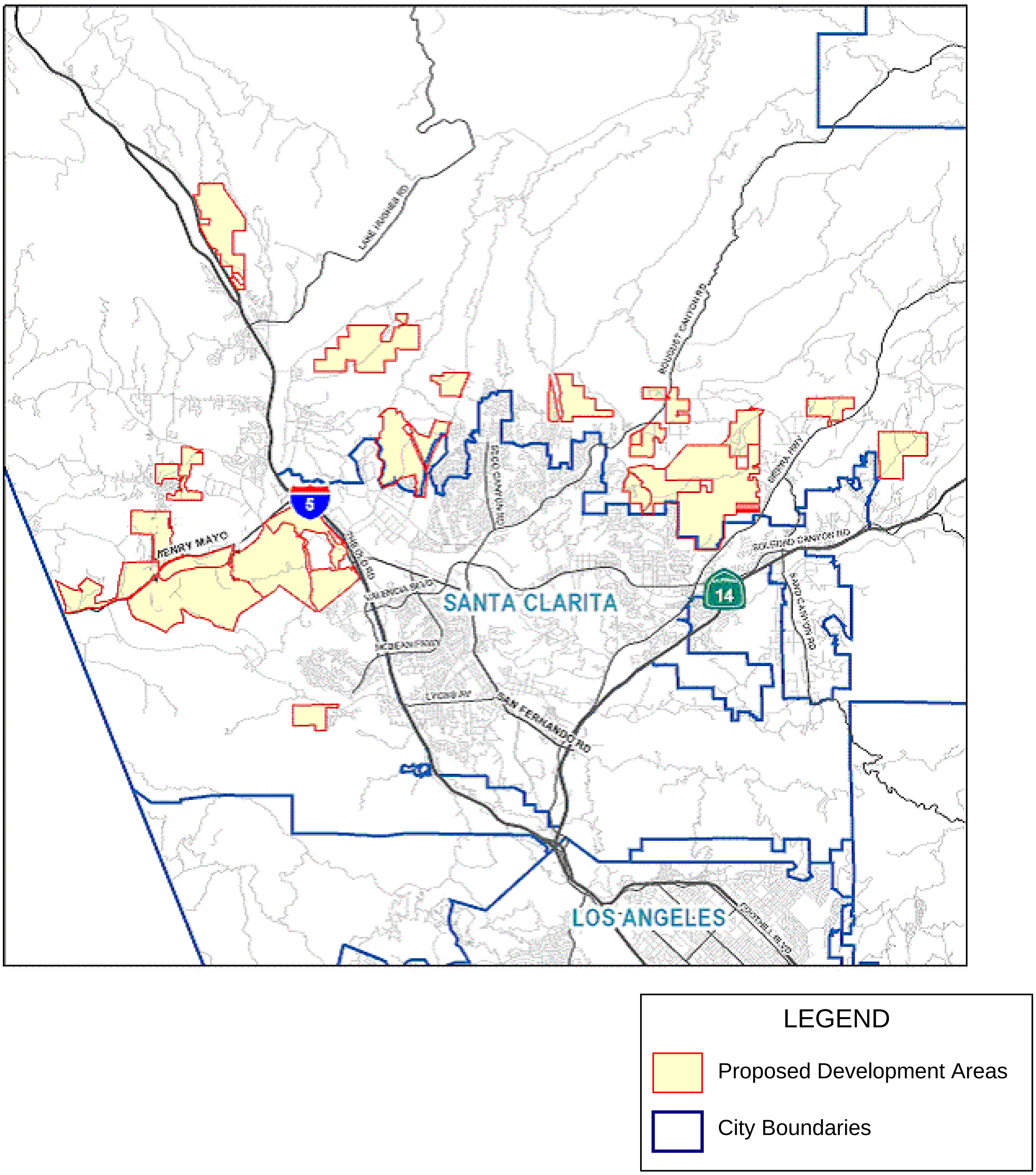

Table 2 shows the size of these developments and the number of housing units within them. From the information provided, it is anticipated that future developments in the Santa Clarita area will result in an average of 0.47 acres of land being developed per housing unit.

Table 2
Size and Number of Housing Units in
New Developments in the Santa Clara River Area

Sample Development Project	Number of Housing Units In Project	Size of Project (AC)	Project Acres per Housing Unit (AC/Unit)
1 - TR 53108	1,444	293	0.20
2 - TR 61105	5,331	1,252	0.23
3 - TR 53295	3,230	812	0.25
4 - TR 54020	568	211	0.37
5 - TR 52455	2,545	966	0.38
6 - TR 51852	1,629	669	0.41
7 - TR 60678	5,464	2,698	0.49
8 - TR 60257	353	218	0.62
9 - TR 52785	62	40	0.65
10 - TR 47760	479	452	0.94
11 - TR 60259	492	500	1.02
12 - TR 52193	58	80	1.38
13 - TR 52194	124	176	1.42
14 - TR 52192	141	203	1.44
15 - TR 60359	50	81	1.62
16 - TR 60922	1,251	2,206	1.76
Total	**23,221**	**10,857**	**0.47**

Therefore, using the Housing Unit Rating Factor of 0.47 project acres per housing unit with the projected 2,500 housing units, it can be expected that 1,175 acres of land will be developed each year resulting in approximately 23,500 acres of land being developed over the next 20 years. Since approximately 14 cubic yards of sediment management capacity are generated from each acre of development, it can be expected that approximately 330,000 cubic yards will be added to the sediment management capacity needs within the LACFCD during the next 20 years.

Since this analysis is being used for the establishment of new regional SPSs in the Santa Clara River Region, a 50-year analysis period was used. This accounts for the sediment produced in a Design Debris Event (DDE) as well as the average annual sediment production from the future debris control facilities. A DDE is a 50-year frequency storm over a four-year old burn occurring in the watershed. Consequently, the 50-year sediment management capacity needs for new development is 825,000 cubic yards. For this 50-year analysis period, we are assuming the DDE will occur in year 25 when half of the debris control facilities are constructed resulting in a debris production volume of 412,500 cubic yards. Therefore, 1,237,500 cubic yards of SPS capacity will be needed to accommodate debris production from debris control facilities constructed by future subdivisions over the next 50 years.

Based on discussions with LDD and Regional Planning, it is anticipated that this additional development and resultant sediment production will occur primarily in the Santa Clara River watershed area. Only limited new development is anticipated in the Santa Monica Mountains, Santa Susana Mountains, and San Gabriel Mountains. Development occurring in the Antelope Valley area generally does not include construction of debris control facilities.

According to the findings in Action Step 1.3, which identified current issues, needs, and deficiencies, the Santa Clara River area currently has the need for 250,000 cubic yards of capacity for sediment management for the next 20 years for our existing debris control facilities. This number, prorated to account for 50 years of debris production, yields a volume of 625,000 cubic yards. A volume of 230,000 cubic yards of sediment is anticipated to be deposited in our existing debris control facilities from a DDE within the next 50 years. Thus, the total volume of required SPS storage for our existing facilities for the next 50 years is 855,000 cubic yards. Wildwood Sediment Placement Site (SPS) is the only SPS in the Santa Clara River area with a remaining capacity of 60,000 cubic yards. Taking into account this available SPS capacity, 795,000 cubic yards of capacity are needed for the next 50 years of sediment production from our existing facilities.

On June 23, 2005, Public Works Administration approved the Strategy 1 Report for the Sediment Management Strategic Plan authorizing staff to develop a SPS Assessment Policy requiring development projects with sediment retention facilities in the Santa Clara River region to pay fees towards the construction of regional SPSs. The Strategy 1 Report also directed staff to evaluate the cost and feasibility of establishing new regional SPSs in this area.

It is recommended that SPSs be established in the Santa Clara River area to provide two million cubic yards of capacity to meet our sediment management needs for the next 50 years, including existing facilities and facilities constructed by new development projects. Sixty-one percent of the cost to establish the new regional SPSs should be funded by fees levied on new developments with debris control facilities. This is in accordance with the ratio of sediment production for new developments to the total regional debris production over the next 50 years.

In Action Step 3.2, Flood Maintenance and Water Resources Divisions are working with Programs Development, Mapping and Property Management, and Design Divisions to identify potential sites and costs to establish new SPSs. After the preliminary concept report is prepared for establishing the new SPSs, Programs Development Division will be requested to program the funds in the Flood Control Construction Program budget to pay for 39 percent of the cost to establish the new regional SPSs for the future sediment production from our existing facilities.

In addition, after the SPS Assessment Policy is ratified, the work group will cooperatively prepare a proposed fee structure for new developments with debris control facilities in the Santa Clara River region to reimburse 61 percent of Public Works' cost to establish new regional sediment placement sites.

Currently, the San Gabriel Mountains region has adequate sediment management capacity to contain the expected 39 million cubic yards of sediment to be generated over the next 20 years from its reservoir, debris basin, and debris retaining inlet facilities. The Santa Monica Mountains region has a need for 180,000 cubic yards of additional SPS capacity to contain the next 20 years of debris production (primarily from existing facilities). The Santa Susana Mountains region requires 1.3 million cubic yards of additional SPS capacity within the region to handle the next 20 years of anticipated sediment production (primarily from existing facilities). There is no deficiency in the Antelope Valley region since currently there are no sediment management facilities, and it is not expected that facilities with significant storage capacity will be constructed in the near future.

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN
ACTION STEP 2.3

Practices and Policies to Meet Projected Sediment Demands

Strategy 2 identifies Public Works' projected sediment management needs for the next 20 years. Action Step 2.3 identifies new practices and policies to meet the sediment management demands in LACFCD projected by Action step 2.2.

Developers throughout the County often apply for transfer of drainage facilities to Public Works for perpetual maintenance. Currently, a developer need only construct his drainage facilities and structures per Public Works standards to have them eligible for transfer to Public Works. As more development encroaches into the foothill areas, a significant number of debris retaining facilities are being transferred to Public Works with no provision as to where the sediment they capture is to be placed. Currently, much of the sediment removed from debris control facilities in the Santa Clara River area is hauled to distant SPSs in other communities. This creates concerns regarding operating costs, traffic, air quality, and environmental justice.

In order to address these concerns, it is necessary to obtain additional funding from developers towards the establishment of new regional SPSs to service the facilities they transfer to Public Works. New developments currently dedicate property or contribute funds towards the establishment of other regional facilities to service their new homes and businesses such as schools, parks, and libraries. Likewise, it is recommended fees be assessed on new developments in the Santa Clara River region with debris control facilities to be used towards establishing new regional SPSs or reimbursing Public Works for the costs it incurs to acquire the SPSs.

Similar to street lighting and bridge and thoroughfare districts, the proposed SPS development fund would assess fees to developers who transfer debris retaining facilities to Public Works. The fund would contribute towards the establishment of sediment placement sites within the Santa Clara River area. In cases of large developments, the fee could be offset or eliminated if the developer is willing to dedicate a suitable area within the development for use as an SPS.

The fee structure will rely on a variety of factors. Action Steps 2.1 and 2.2 indicate that an estimated two million cubic yards of SPS capacity is needed to service the existing and anticipated debris control facilities in the Santa Clara River area for the next 50 years. Project Concept Reports are needed to determine the cost to prepare design plans, obtain environmental documents, secure permits, acquire right of ways, and construct the required initial drainage facilities and access roads for the proposed regional SPSs. Given the current price of real estate and the difficulty in obtaining permits for such an operation, it may be in Public Works' best interest to have the developer dedicate a portion of his development in lieu of collecting a fee to service the facilities constructed as part of the development. This practice will also allow for the SPSs to be operational once construction of the debris retaining facilities is completed.

The proposed fee structure will be developed with input from Land Development, Design, Mapping and Property Management, Programs Development, Water Resources, and Flood Maintenance Divisions, and from the Land Development Advisory Committee. After obtaining concurrence from County Counsel, the fee structure will be submitted to the Board of Supervisors for approval.

As an additional condition for development, if a SPS is to be included within a development or if a potential SPS is sited nearby a proposed development, the long-term characteristics of the SPS operations should be disclosed to prospective buyers via deed restrictions. The impacts of SPS operations would be disclosed to cities and communities in the development's environmental impact report. This disclosure would help in reducing potential community opposition that Public Works currently faces in the use of its existing SPSs. An example of proper facility placement is Spinks SPS, which lies between Bradbury and Spinks Debris Basins. Cleanouts of these basins require no truck traffic beyond daily ingress and egress to travel through residential areas. While this situation is ideal, it is possible to work with developers to develop SPSs that will create as little impact as possible to the adjacent property owners.

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COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3 REPORT

Examining Alternatives to Meet Public Works' Sediment Management Needs for Next 20 Years

January 2006

Sediment Management Strategic Plan – Strategy 3 Report
County of Los Angeles Department of Public Works

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Appendices

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STRATEGY 3 REPORT - EXECUTIVE SUMMARY

Introduction

Sediment management has become a critical issue at Public Works because we are reaching capacity at our established sediment placement sites but the number of debris retention facilities continues to increase, especially in the Santa Clarita area. Additional challenges include increasingly restrictive environmental regulations and public opposition to hauling through their neighborhoods to access our sediment placement sites. As a result of these issues, a sediment management plan consisting of four strategies is being developed. This report discusses the findings and goals resulting from the work performed under Strategy 3.

Background

In October 2003, Flood Maintenance and Water Resources Divisions were given the MAPP goal of developing a strategy and action plan to address Public Works' sediment management responsibilities at all County maintained roads and for all reservoirs, debris basins, sediment retaining inlets, and SPSs to maintain flood control protection and access for the residents of the Los Angeles County Flood Control District (LACFCD). Administration approved developing a sediment management strategic plan with oversight from the Steering Committee in order to implement its four strategies:

- Strategy 1: Identifies Public Works' current sediment management practices, issues, and deficiencies. **(Completed)**

- Strategy 2: Identifies Public Works' projected sediment management needs, including anticipated future development within the LACFCD for the next 20 years and recommends follow-up activities to address this issue. **(Completed)**

- Strategy 3: Examines alternatives to meet Public Works' sediment management needs for the next 20 years.

- Strategy 4: Develops an implementation plan for the sediment management strategic plan to meet Public Works' sediment management needs for the next 20 years.

This report summarizes the findings and goals from Strategy 3.

The Strategy 3 objective is to identify alternatives to meet Public Works' sediment management needs for the next 20 years. This objective was accomplished through five Action Steps:

3.1 Research methods to reduce sediment generation and deposition at Public Works' facilities.

3.2 Identify alternatives to increase sediment storage capacity to meet Public Works' sediment management needs for the next 20 years.

3.3 Investigate utilization of landfills for sediment disposal, including use of sediment as daily cover instead of sediment placement sites.

3.4 Evaluate Public Works' policy on the maximum sediment transport capacity allowed in channels and covered storm drains to reduce sediment deposition in debris basins and reservoirs.

3.5 Identify future opportunities and projects requiring large quantities of sediment. Such projects could be utilized as an alternative to depositing material at sediment placement sites, or a means to excavate the sites and restore their storage capacity for future facility cleanouts.

Priority Goals

Several goals were made under each Action Step. Following are the priority goals for the Workgroup to implement resulting from the findings of Action Steps 3.1 through 3.5:

1. Authorize the preparation of project concept reports for establishing new SPSs in the Santa Clara River and Diamond Bar areas as discussed in Section 3.2.3.

2. Authorize continued working relationships with the City of Irwindale, Vulcan Materials Company, United Rock, Nu-Way Rock, and Holliday Rock to develop agreements with them for placement of sediment at their various pits located throughout the foothill areas.

3. Create a part-time sediment manager position, similar to that of Public Works' railroad coordinator, who would broker sediment from Public Works' facilities to compatible use entities and coordinate outreach to communities impacted by cleanout operations. The sediment manager's tasks would include the following:

    a. During cleanout operations, work with various rock quarry operators, nurseries, "dirt brokers", and other end-users (see Table 3.5-1) to find alternative placement/uses of the sediment to divert as much material as possible from Public Works' SPSs. Seek to maximize utilization of the Savage Canyon (Whittier), Puente Hills (Industry) and Scholl Canyon (Los Angeles) Landfills, which accept clean fill dirt for free.

    b. Develop a program to advertise the existing sediment stored within Public Works' existing SPSs and allow for private individuals to reuse the sediment.

Concurrently implement the East Area SPS Capacity Optimization Program, as described in Section 3.2.10 of this report.

c. Coordinate with Programs Development Division and Public Relations Group to identify and address end users' regulatory issues regarding material from the cleanouts, comply with regulatory requirements for the reuse of sediment in SPSs and conduct outreach efforts to affected local residents.

4. Authorize the study of alternatives to reduce the volumes of sediment needed to be placed in SPSs in the Santa Clara River area. Such study would consist of the following:

   a. Preparation of a study to explore the feasibility of placing sediment from debris retention facilities in the Santa Clara River area to locations in the structurally modified reaches of the Santa Clara River and its tributaries that are subject to scour from clarified flows due to the lack of in stream stabilization structures. Potential locations to be investigated are identified in Section 3.2.8. The scope of the study would include cost benefit analyses and identification of regulatory requirements and compliance with them.

   b. Evaluation of the sediment transport policy for channels and drains in the Santa Clara River watershed to determine the feasibility and cost benefit of revising drain and channel design standards to allow more sediment transport to the Santa Clara River and its major tributaries, the reaches of which either remain in their natural states or lack in stream stabilization structures.

5. Authorize the utilization of all established and active SPSs at least once every two years to maintain Public Works' ability to continue usage of these facilities. If no sediment cleanouts are conducted, the biennial usage should entail removal of sediment to free up storage capacity, but of a scale and duration that does not cause significant traffic, noise or air quality impacts. Possible uses for the sediment from the SPSs include beach replenishment, beneficial material reuse/resale or agency requests for fill dirt (i.e. cities, contractors, etc.).

6. Authorize the preparation of feasibility studies, cost benefit analyses, and other related investigations needed to provide goals on Public Works' inactive SPSs for: 1) sale as surplus property to fund SPS site acquisition in the Santa Clara River and Diamond Bar areas; 2) use of property for mitigation credits; or 3) other purposes as described in Section 3.2.9 of this report.

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COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3.1

Research Methods to Reduce Sediment Generation and Deposition at Public Works' Facilities

January 2006

Sediment Management Strategic Plan – Strategy 3 Report
Action Step 3.1: Reduction of Sediment Deposition at Public Works Facilities

3.1.1 Introduction

Action Step 3.1 researches methods to reduce sediment generation and deposition at our facilities.

The County of Los Angeles is home to mountains with some of the highest erosion rates in the nation. Over the years, Public Works has built numerous debris basins and other debris control structures in the mountains to protect communities from the highly erosive foothills in the County by trapping sediment. Public Works has likewise required developers to construct numerous debris basins and debris retaining inlets. The Flood Control District, administered by Public Works, also constructed dam and reservoir facilities that serve a debris control function in addition to flood peak attenuation and water conservation.

The Flood Control District also undertook a coordinated program with the U.S. Forest Service (USFS) to construct numerous crib dams in the San Gabriel Mountains for the purpose of reducing the amount of sediment generated by these mountains. In the 1970s, the Flood Control District and USFS suspended the crib dam construction program based on the unfavorable findings of USFS's 1973 "Evaluation of Check Dams for Sediment Control" report.

Public Works also has well established structural and operational measures to control sediment deposition. These measures include temporary debris control implemented after brush fires to protect structures, houses and roads, and lower cleanout thresholds for debris basins below the burned areas. Public Works also provides postburn mudflow protection advice to property owners potentially affected by runoff from the burned watersheds.

Due to the expense and environmental regulatory requirements associated with constructing and maintaining debris basins and debris retaining inlets, Action Step 3.1 investigates the means available to reduce erosion in watersheds and the sediment production associated with it.

The group began by defining/differentiating between sediment generation and deposition. We also reviewed the Sediment Management Matrix (developed under Action Step 1.1), reviewed the results from the best management practices survey, reviewed existing manuals, references, and practices on reducing sediment generation and deposition and developed a list of possible methods to reduce sediment generation and deposition.

Goals

Public Works should continue constructing debris basins, debris retaining inlets, and temporary debris control structures as required to mitigate deficiencies and respond to burned watershed conditions to ensure the proper operations of our flood control system.

The research completed for Action Step 3.1 did not identify any other viable cost effective and permanent method that can be applied on a regional basis to reduce sediment generation in mountain watersheds. Erosion is a natural process in the County's mountain watersheds that cannot be cost effectively reduced on a regional basis in an environmentally satisfactory manner based on the findings of this investigation. Public Works should, however, periodically evaluate new research on regional methods to reduce debris production and continue to evaluate selected debris reduction measures such as revegetation, landscaping, and hillside stabilization in specific areas, especially those hillsides prone to landslides and with high erosion rates affecting road facilities. Specific goals are as follows:

- Road culvert design - Continue the current practice of designing road culverts to convey burned and bulked flows from a burned watershed according to our policy on levels of flood protection. Several counties responding to our survey indicated they use this practice.

- Landscaping/vegetation - Conduct a cost/benefit analysis of vegetating hillsides that produce the most sediment that deposits on road facilities versus the cost of cleaning up the sediment afterwards.

- Hydroseeding/Hydromulching - Cooperate and consult with other agencies including the USFS in choosing when and where to implement measures to restore vegetation after brush fires. Currently, USFS's current practice is to allow as much as possible the native chaparral vegetation to reestablish naturally without concerted revegetation efforts.

Relevant Definitions

Erosion. The detachment of a portion of the soil surface as a result of wind, water, ice, gravity, and/or land disturbance activities. Erosion control practices prevent soil particles from being detached. Based on this, the term "sediment generation" is defined by erosion.

Sediment. Soils or other surface materials transported by surface water as a product of erosion.

Sedimentation. The transport and deposition of sediment. Sediment control practices prevent detached particles from leaving the site or entering a water supply. Based on this, the term "sediment deposition" refers to sedimentation.

Sediment deposition can change the flow characteristics of a water body. These changes may result in an increased potential of flooding. Sediment deposition on roads (often caused by soil instability or landslides from adjacent hillsides) is considered a potential hazard to motorists. Mudflows from the hillsides are also a potential hazard to buildings, residences, and their occupants.

Some factors affecting the amount of soil loss during storm events include the amount and intensity of the rainfall, the soil erodibility, the topography (slope length, steepness, and shape), ground cover, and land use. Human intervention, through the implementation of Best Management Practices (BMPs), alteration of the topography or alterations in the ground cover can have an effect on the amount of soil loss.

Brush fires dramatically alter the erosion response of watersheds. With the removal of the vegetation canopy and surface organic material, rainfall interception is reduced and denuded hillsides are subjected to unimpeded raindrop impacts. In addition, the combustion of soil organic matter can create a subsurface water-repellent layer that restricts infiltration and promotes overland flow. In Southern California, first-year postfire sediment yield can be 20 times greater on average than comparable unburned levels.

For purposes of Strategy 3, flood control facilities and road facilities affected by the sediment generation and sediment deposition include: dams, debris basins, debris retaining inlets, channels, roads, road culverts, and temporary sediment management structures such as rail and timber structures. The flood control and road facilities mentioned above indirectly impact sediment placement sites.

3.1.2 Flood Control District's Streambed Stabilization and Debris Reduction Program

Since its inception in 1914, the Flood Control District constructed streambed stabilization structures to reduce debris production in mountain watersheds. Massive failure of the initial 1,500 structures built between 1914 and 1920 occurred during subsequent flood producing storms, especially the New Year's 1934 storm. The crib dams constructed by the Flood Control District in Brand Canyon in 1938, in cooperation with the USFS and the National Park Service, were a successful venture. As documented in the Flood Control District's 1959 report entitled: "Report on Debris Reduction Studies," the Flood Control District and the USFS subsequently undertook an expansive crib dam construction program for streambed stabilization and debris reduction purposes. As part of this program, the Flood Control District and USFS constructed the Nino Canyon crib dam system in 1949. By 1974, 361 crib dams were constructed under this program. The crib dams ranged in storage size from the 500-cubic yard capacity Coon Canyon Crib Dam C-46 to the Browns Canyon B-1 Crib Dam with a 690,000-cubic yard capacity.

Under the partnership between the Flood Control District and the USFS, the crib dams were constructed primarily by USFS and the costs were split evenly between the two agencies. As part of its evaluation for these efforts, the USFS prepared a report in 1973 entitled: "Evaluation of Check Dams for Sediment Control Report," that discussed

USFS's comprehensive geomorphic and hydrologic evaluation of six of the crib dam systems installed in mountain watersheds. The report found that the six crib dams systems evaluated were only marginally cost effective as a group. Some of the crib dam systems had a positive cost effectiveness; certain crib dams systems had a negative return on the investment.

After the promulgation of USFS's 1973 report, the Flood Control District suspended its streambed stabilization and check dam construction program. Since that time, the Flood Control District and Public Works have been focusing their sediment management efforts solely on the construction and maintenance of permanent debris control facilities (debris basins and debris retaining inlets) and temporary post fire debris control protective measures (rail and timber structures.)

3.1.3 Sediment Management Matrix Review

Review of Average Annual Debris Production (AADP) rates shows the highest production rate and the largest number of sediment management facilities in the Flood Control District are located in Sediment Management Area II (San Gabriel Mountains), followed by Sediment Management Area III (Santa Susana Mountains) and Sediment Management Area IV (Santa Clara River Watershed), respectively. Sediment Management Area V (Antelope Valley) lacks any kind of sediment management facility.

Sediment Management Area II (San Gabriel Mountains) has the highest Average Annual Debris Production rates and the most sediment management facilities.

The three SPSs with the highest AADP rates in the Flood Control District (Burro Canyon, Big Tujunga, and Cogswell) are all located in Sediment Management Area II. Similarly, six of the ten DBs with the highest AADP rates in the District are all located in Sediment Management Area II.

Mountain erosion, landslides, and slope failures along roads make Sediment Management Area I (Santa Monica Mountains) the most sensitive for Public Works' road facilities.

3.1.4 Review of Results from the Best Management Practices Survey

Water Resources Division conducted a survey of Best Management Practices (BMPs) among 21 cities/counties during March, 2004. The results of the survey suggest that about 50 percent of the agencies have implemented erosion/sediment reduction methods utilizing BMPs. These methods include recycling and reuse of sediment as road shoulders and shoulder widening berms and levees. County of Orange Resources and Development Management Department has a sediment TMDL (total maximum daily load) program in place as a sediment management method. County of San Diego has provided BMPs specific to each site, which includes hydro seeding, covering of material, planting, and timely disposal to reduce erosion/sediment accumulation. The County of Riverside Flood Control and Water Conservation District has implemented slope and invert stabilization and grade stabilizers as methods to reduce erosion/sediment.

The U.S. Army Corps of Engineers operates its dams to minimize sediment accumulation in its flood control basins and excavates the sediment that accumulates in them.

A second survey sent out to eight transportation agencies in March 2004 indicated that:

a. The County of Santa Cruz Department of Public Works has implemented hillside stabilization methods.

b. The County of Alameda Public Works, County of Lake Department of Public Works, County of Santa Cruz Department of Public Works, and County of Ventura Public Works implement landscaping as a means of erosion/sediment reduction .

c. The County of Alameda Public Works, County of Lake Department of Public Works, County of Santa Cruz and County of Ventura Public Works design their road culverts to carry sediment as a means of reducing sediment deposition in their road facilities.

d. The County of Lake Department of Public Works, County of Tulare Resources Management, and County of Ventura Public Works pave the inverts of their road shoulders as a means to reduce sediment runoff.

According to the survey, hillsides stabilization methods are not fully utilized by transportation agencies to reduce erosion/sediment deposition.

The survey also showed four out of 21 cities or counties have a documented "Sediment Management Plan." Also, a few cities/counties have an approach to determine projected sediment management needs and most cities/counties have a public outreach program to keep stakeholders informed of their sediment management efforts and needs.

3.1.5 Review of Existing Manuals, References, and Practices on Reducing Sediment Generation and Deposition

Existing manuals available at Public Works have been reviewed. There were two manuals that had significant information on sediment reduction techniques. Some of the manuals reviewed (including outside references) included:

- **Report on Debris Reduction Studies for Mountain Watershed of Los Angeles County** *(Los Angeles County Flood Control District, November 1959. Prepared by Dams and Conservation Branch).*

- **Evaluation of Check Dams for Sediment Control, Los Angeles River Watershed, Angeles National Forest** *(Earl C. Ruby, United States Forest Service, 1973)*

- **Design Manual - Debris Dam and Basin** *(Los Angeles County Flood Control District,1979. Prepared by Design Division with the participation of Hydraulic, Materials Engineering, Operation and Maintenance, and Project Planning Divisions)*.

- **Design Manual - Hydraulic** *(Los Angeles County Flood Control District, March 1982. Prepared by Design Division).*

- **Project Preparation Instruction Manual for Drainage Facilities** *(Los Angeles County Department of Public Works, February 1988. Prepared by Design Division with assistance from Land Development and Survey Divisions).*

- **Standard Plans 2000 Edition** *(Los Angeles County Department of Public Works).*

- **After The Fire! Returning to Normal** *(Federal Emergency Management Agency, United States Fire Administration, June 1998).*

- **Homeowner's Guide For Flood, Debris, and Erosion Control** *(Los Angeles County Department of Public Works).*

- **A Homeowner's Guide to Fire and Watershed Management at the Chaparral/Urban Interface** (*Klaus W. H. Radtke, October 2004).*

- **Erosion Control – Journal of the International Erosion Control Association** *(Forester Communications, Inc., November/December 2004).*

Only the Project Preparation Manual contains some, but very limited, information pertaining to vegetation and trees. There are also a few memos and guidelines from Water Resources Division pertaining to vegetation management on embankments and dams.

Online research on feasible methods for reducing sediment generation and deposition was also conducted. Many websites discuss Best Management Practices (BMPs) to reduce sediment generation and deposition at a relatively small scale (e.g. construction sites). However, some BMPs can be used in specific cases. Online references are listed below:

- **Erosion and Sediment Control Ordinance**, *City of Minneapolis Planning Department.*
  http://www.epa.gov/owow/nps/ordinance/documents/B2a-Minneapolis.pdf

- **Post-Fire Erosion Control Research on the San Dimas Experimental Forest: Past and Present**. *Peter M. Wohlgemuth, U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Riverside Forest Fire Laboratory, Riverside, CA. 92507. First Interagency Conference on Research in the Watersheds, Abstract.*
  http://www.tucson.ars.ag.gov/icrw/Proceedings/Wohlgemuth.pdf

- **Erosion and Sediment Control Handbook – A guide for Protection of State Waters through the use of Best Management Practices during Land Disturbing Activities.** *John C. Price and Robert Karesh, Tennessee Department of Environment and Conservation, Second Edition, March 2002.*
  http://www.state.tn.us/environment/wpc/sed_ero_controlhandbook/1.Introduction.pdf

- **Soil Erosion Control after Wildfire** *(R. Moench, J. Fusaro. Colorado State University Cooperative Extension – Natural Resources, October 2003. Natural Resources Series. Forestry No. 6.308)*
  http://www.ext.colostate.edu/PUBS/NATRES/06308.pdf

- **Erosion Control – After the Fire** *(November/December 2000, Forester Communications, Inc.)*
  http://www.forester.net/ec_0011_fire.html

- **Stormwater Best Management Practice (BMP) Hanbdooks – Construction** *(California Stormwater Quality Association CASQA, 2003)*
  http://www.cabmphandbooks.net/Construction.asp

3.1.6 Current Practices to Reduce Sediment Generation and Deposition

- Debris Basins (for purposes of Strategy 3, debris basins capture debris flows and sediment to prevent them from going into the downstream flood control system).
- Hillside stabilization (this has been limited to constructing pipe and timber structures for access roads and/or trails protection).
- Checkdams or cribdams
- Landscaping (this is limited to maintenance of existing trees, shrubs, etc.)
- Construction of temporary emergency structures in fire areas including rail and timber structures and installation of K-rails and sandbags.

3.1.7 List of Possible Methods to Reduce Sediment Generation and Deposition

Methods to reduce sediment generation and deposition can be classified as either structural or nonstructural or as erosion prevention and sediment control practices.

Structural Methods

- Check dams
- Silt fences
- Earth dikes
- Gabions
- Dugout Ditch Basin
- Drainage swales
- Sediment traps
- Subsurface drains
- Pipes slope drains
- Outlet protection
- Riprap reinforcement soil retaining system
- Temporary structural fences/barriers
- Temporary or permanent sediment basins
- Paved inverts of road shoulders
- Designing road culverts for sediment carrying capacity

Non-Structural Methods

The nonstructural methods or soil stabilization practices are implemented to help reduce surface runoff and control sediment release. Some of these methods are temporary and degradable or long term and nondegradable. Permanent vegetation reinforcement such as mulching, control netting, turf reinforcement mat, erosion control blanket, and hydraulic mulch are used for slope protection, stream/river bank stabilization, and rehabilitation and channel lining. In addition, hydraulic seeding is a technique that can, under the right soil and topographic conditions, be used for reestablishment of postfire plant communities. However, as previously stated, the USFS has found that natural reestablishment of native vegetation is preferred to planting or hydroseeding.

Erosion Prevention

Erosion prevention practices are ground covers that prevent erosion from occurring. Ground covers include vegetation, riprap, mulch, and erosion blankets that absorb the energy of a raindrop's impact and reduce the amount of sheet erosion. Diversions, check dams, slope drains, hay bales, and storm drain protection, while they may also trap sediment, are primarily used to prevent rill and gully erosion from starting. It is noted that the efficacy of these measures is dependant upon their proper installation. The installation of numerous erosion control blankets by local stakeholders in the wake of the 1993 Kinneloa Fire was not done properly. The blankets washed down with the debris flow into the area debris basins during the ensuing storm season.

Sediment Control

Sediment control practices attempt to prevent soil particles that are already being carried in stormwaters from leaving the site and entering streams or rivers. Some examples of controls include silt fences, sediment traps, sediment basins, check dams, and even vegetative cover. It is noted that silt fences cannot be employed in steep hillsides with slopes exceeding 20 percent as they slide downhill during major storm events. Many watersheds in the mountainous portion of the County have average slopes that exceed 30 and 40 percent.

Some BMPs may be an erosion prevention practice or a sediment control practice, or both.

3.1.8 Post-Fire Rehabilitation BMPs

There are several BMPs that can be used after a watershed burns. Public Works has successfully used rail and timber structures to trap some of the excessive sediment that can be generated during the first four to five years after a fire. Public Works has also built inlet protection structures and in some instances temporarily placed K-rails in specific locations. On one occasion, hydroseeding was employed at Lincoln SPS where the slopes were eroding. Other practices include reseeding of ground cover, contour raking, and construction of straw bale dams for small streams.

- Contour Raking:

  Contour raking is performed to increase precipitation infiltration rates on hydrophobic soils.

- Hydromulching and Hydroseeding:

  This technique is applied to reduce erosion and accelerate revegetation. A mixture of water, fertilizer, and seed are applied to hillsides It is noted that the USFS does not employ hydroseeding as a standard practice since the seed mixture may contain nonnative vegetation that could become an invasive vegetation problem, and the mixture can often wash off steep slopes before the seed can germinate. The USFS finds that often burned areas retain their seed banks and allowing the native chaparral vegetation to repropagate on its own produces healthier ground cover. The USFS thus employs reseeding as a last resort.

- Straw Mulching:

  Straw mulch is applied where the fire consumed the ground cover and the expected overland runoff would threaten areas at risk. First-year benefits include stabilizing ashes on site, preventing loss of topsoil, improving infiltration rate, and replacing organic material consumed by the fire. Burned areas are usually flood source areas, and therefore, mulching has the secondary benefit of controlling flood peaks to an acceptable level. However, the mulch is vulnerable to high storm flows, and the material could wash into downstream drainage structures such as culverts and plug them.

- Straw Wattles:

  Straw wattles are long tubes of plastic netting packed with excelsior, straw, or other material. Straw wattles are placed on slopes to act as terraces to prevent slope erosion and facilitate revegetation. They act as grade control structures in stream channels with flatter gradients and finer streambed materials or in streams with uneven bottoms. However, the flatter gradient will already result in lower sedimentation rates, so the benefit of this measure in overall debris reduction in the mountain watersheds would likely be low in relation to the cost of installation and maintenance.

- Straw Bale Check Dam:

  Straw bales placed in small drainage areas act as a dam collecting sediments from upslope and slowing the velocity of water traveling down slope. However, recent application of this measure indicates its effectiveness is limited. Many of the hundreds of hay bales placed in the San Dimas Reservoir watershed to stem erosion in the wake of the 2002 Williams Fire washed into the reservoir during the ensuing 2002-03 storm season. Sediment trapped behind these bales likely washed into the reservoir as well. These hay bales and associated sediment were removed from San Dimas Reservoir in Public Works' 2003 and 2004 reservoir cleanout contract. Their volume is estimated to be much less than one percent of the total 536,00 cubic yards of material removed from the reservoir.

- Log Structure and Rock Check Dams:

  These structures are used as stream/channel control structures. Their purpose is to reduce water velocity, thereby reducing the in-channel erosive force to prevent down cutting of the streambed and toes of the embankments and capture some of the sediment in the stream flow. Many of such structures were installed in the San Gabriel Mountains after the 1933 fire. However, most of these structures failed during the New Year's 1934 storm, and the material behind the failed structures only added to the storm's impact to downstream communities. Due to these failures, the Flood Control District, as an alternative, initiated its program of debris basin construction and developed with the USFS an improved crib dam design.

- Landscaping/Vegetation for Fire and Watershed Safety:

  This measure involves replacing highly flammable native plants in fire-prone watershed areas with low growing, less flammable plants of equal root depth and root strength. Low-growing plants, however, usually have relatively shallow root systems; tall plants have relatively deep and broad lateral root systems. Landscaping thus requires a compromise between minimizing fuel volume and maximizing root depth. Replacing native plant species with nonnative species may,.

however, conflict with the habitat objectives of the Angeles National Forest and areas being zoned as open space by local jurisdictions

3.1.9 Costs and Benefits of Debris Control and Debris Reduction Measures

Public Works expends an average of $10 million annually to maintain its numerous debris basins. The combined area of the basins themselves is approximately 0.5 square mile. The combined watershed area tributary to the debris basins is approximately 63 square miles. These watershed areas are typically outside of Public Works' rights of way and in environmentally significant areas, such as the Angeles National Forest, the Santa Monica Mountains, and parcels that are being increasingly zoned as open space by local jurisdictions. These lands have their own environmental restrictions in regards to construction of additional facilities and vegetation management. Even if the environmental regulations governing these lands allowed the construction of additional structures or vegetative measures, the cost of these alternative measures is high, and their sediment retardation value is limited. The cost, on average, of constructing a crib dam is over $500,000. As previously stated, these structures need maintenance to maintain their function, so there would be additional costs for maintaining the structures and constructing the access roads necessary to do it. The cost of hydroseeding is approximately $960,000 per square mile, and the likelihood is high that the entire watershed of a debris basin can be burned by a single fire event. There does not appear to be alternative structural measures or vegetation management programs that could be employed upstream of the debris basins that would be more cost effective and lower in area of adverse environmental impacts than what is already being employed at the debris basins.

The scope of employing debris reduction measures in the watersheds of Public Works' dam and reservoir facilities becomes even more daunting. The combined area of the dam and reservoir facilities with a debris control function is approximately 2.5 square miles. The total watershed area tributary to these facilities is approximately 690 square miles. Most of the sediment producing watershed tributary to these facilities is within the Angeles National Forest. The anticipated five-year cost of reservoir sediment removal in the wake of the 2002 Williams and 2003 Padua Fires is approximately $47 million concentrating in only 0.3 square mile of reservoir bottom. Constructing and maintaining additional crib structures and employing vegetation measures to the attendant 79 square miles of burned watershed would not be any more cost effective and would likely adversely impact more area than the reservoir cleanouts.

There thus does not appear to be viable means to significantly reduce sediment production in the County's mountain watershed areas upstream of Public Works' flood control facilities.

3.1.10 Brief Descriptions of Some of the Structural and Non-Structural Measures

- Check Dams:

  A check dam is a small device constructed of rock, sandbags, or fiber rolls, placed across a natural or man-made channel or drainage ditch. Check dams

reduce scour and channel erosion by reducing flow velocity and encouraging sediment dropout. Check dams are used in small open channels, which drain 10 acres or less, or in steep channels where stormwater runoff velocities exceed 1.5 meters per second. They can also be used during the establishment of grass linings in drainage ditches or channels and in temporary ditches where a short length of service does not warrant establishment of erosion-resistant linings.
Check dams can be left in place following construction activities and allowed to accumulate sediment and vegetation.

Limitations:

- o Not appropriate in channels which drain areas greater than 10 acres.
- o Not to be placed in channels which are already grass-lined unless erosion is expected as installation may damage vegetation.
- o Requires extensive maintenance following high velocity flows and may have to be replaced.
- o Promotes sediments trapping which can be resuspended during subsequent storms or following the removal of the check dam.

- Silt Fence:

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences are placed below the toe of exposed and erodible slopes, down slope of exposed soil areas, around temporary stockpiles, and along streams and channels.

Limitations:

- o Not effective unless trenched and keyed in.
- o Not intended for use as mid-slope protection on slopes greater than 4:1.
- o Must be maintained to remain effective.
- o Not intended for use in streams, channels, or anywhere where flow is concentrated.
- o Difficult to install and maintain in windy areas.
- o Must be removed and disposed of after no longer needed for sediment retention.

- Desilting Basin:

A desilting basin is a temporary basin formed by excavation and/or by constructing an embankment to temporarily detain sediment-laden runoff under slow flowing conditions, allowing sediment to settle out before the runoff is discharged. Desilitng basins shall be considered for use where sediment-laden water may enter the drainage system or watercourses and at outlets of disturbed soil areas with areas between 5 and 10 acres.

Limitations:
  - o Alternative BMPs must be thoroughly investigated for erosion control before selecting temporary desilting basins.
  - o Not appropriate for drainage areas greater than 75 acres.
  - o If safety is a concern, basins may require protective fencing.
  - o Size may be limited by availability of right of way.

- Storm Drain Inlet Protection:
  Storm Drain Inlet Protection is used at storm drain inlets to detain sediment-laden runoff to allow the monitoring of the sediment to settle out prior to discharge of the runoff into stormwater drainage system or watercourses.

  Limitations:
  - o Right of way required for sediment storage during a Design Debris Event.
  - o Regulatory agency permits require for sediment removal.

- Sediment Trap:

  A sediment trap is a temporary basin with a controlled release structure formed by excavating or constructing an earthen embankment across a waterway or low drainage area. Sediment traps may be used on construction projects where the contributing drainage area is less than 5 acres. Traps would be placed where sediment-laden stormwater may enter a storm drain or watercourse, and around and/or up-slope from storm drains inlet protection measures. This BMP may be implemented in addition to other BMPs.

  Limitations:
  - o Requires large surface areas to allow sediment to settle.
  - o Not appropriate for drainage areas greater than 5 acres.
  - o Only removes large and medium sized particles and requires upstream erosion control.
  - o Attractive and dangerous to children requiring protective fencing.

- Straw Bale Barriers:

  A straw bale barrier is a temporary linear sediment barrier consisting of straw bales designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before being discharged downstream. Straw bale barriers are typically used along the perimeter of a construction site, along streams and channels, below the toe of exposed and erodible slopes, down slope of exposed soil areas, and around stockpiles.

  Limitations:
  - o Not to be used in flood control channels.
  - o Instillation and maintenance could be labor intensive.
  - o Not recommended to be used on paved surfaces.
  - o Shall not be used in lined ditches.

- Degraded straw bales may fall apart when removed or if left in place for extended periods of time.

- Dugout Ditch Basin:

  A dugout ditch basin consists of one or a series of small dugout basins located within a flow channel. Dugout ditch basins are used to reduce runoff velocity, promote sediment retention, and allow settling within longitudinal roadside ditches in a cut section or as longitudinal sediment retention basins at the toe of fills. Applications include ditch sediment traps, interceptor ditches, and toe of slope protection.

  Limitations:
  - Require maintenance following high velocity flows.
  - Promotes sediment trapping which can be resuspended during subsequent storms.

- Sandbag Barrier:

  Sandbag barrier is a temporary linear sediment barrier consisting of stacked sandbags designed to intercept and slow the flow of sediment-laden sheet flow runoff. Sandbags can be used where flows are moderately concentrated such as ditches, swales, and storm drain inlets to divert and/or detain flows. There are many uses of this BMP, which may be implemented on a project-by-project basis in addition to other BMPs. These are some of the uses: along the perimeter of a construction site, along streams and channels, below the toe of exposed and erodible slopes, down slope of exposed soil areas, and around stockpiles. To divert or direct flow or create a temporary sediment basin, parallel to a roadway to keep sediment off paved areas.

- Gravel Bag Berm:

  A gravel bag berm consists of a single row of gravel bags that are installed end-to-end to form a barrier across a slope to intercept runoff, reduce velocity, release runoff as sheet flow, and provide some sediment removal from runoff. Gravel bag berms are used along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow. This BMP also may be implemented on a project-by-project basis with other BMPs.

- Fiber Rolls:

  Fiber rolls are prefabricated rolls or rolled tubes of erosion control blanket made up of straw, flex, or other similar materials that are rolled and bound into a tight tubular roll and placed on the face of slopes at regular intervals to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some removal of sediment from runoff. They may be used along the top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow. Fiber rolls may be used as check dams.

Limitations:

- o Although fiber rolls provide some sediment removal, they are not to be used in place of linear sediment barriers such as silt fences, sandbag barriers, or straw bale barriers.

3.1.11 Conclusion

Most of the sediment runoff in the County is generated as a result of rainfall on a naturally erosive watershed, a condition that is exacerbated when the watershed is denuded by fires.

Analysis of constructed check dam systems and field experience indicates there are no feasible long-term, cost-effective, and environmentally acceptable structural or vegetation maintenance practices found to reduce the overall erosion rate in the County's mountain watersheds. Continued operation and maintenance of debris basins and debris retaining inlets, and the employment of temporary sediment control structures during the recovery period of a burned watershed remain the most cost-effective and lowest impact means of protecting downstream communities from the impacts of sediment flows. Some additional measures, however, should be implemented where feasible such as paving the inverts of road shoulders; designing new road culverts to be debris-carrying; placing debris retaining structures at the inlets to existing nondebris carrying culverts. Reseeding should be employed only as a last resort in relatively small, relatively flat areas.

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COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3.2

Identify alternatives to increase sediment storage capacity to meet Public Works' needs for the next 20 years

January 2006

Sediment Management Strategic Plan – Strategy 3 Report
Action Step 3.2: Identification of Alternatives to Increase Sediment Storage Capacity for the Next 20 Years

3.2.1 Introduction

Action Step 3.2 identifies alternatives to increase sediment storage capacity to meet Public Works' needs for the next 20 years, which includes enlarging our existing SPSs, employing sediment removal projects, and identifying locations to establish new SPSs. Based on the results of Action Step 2.2 for the Santa Clara River and Santa Monica Mountains, the available storage versus anticipated sediment accumulation for the next 20 years was deficient by 810,000 and 180,000 cubic yards, respectively. Action Step 3.2 of the Sediment Management Strategic Plan will address these concerns and offer solutions to eliminate and/or delay future sediment placement shortfalls. Other alternatives to reduce the amount of sediment placement will also extend Public Works' sediment placement site life span beyond 2024.

The items discussed in this report were targeted for investigation in the Strategy 1 Report of the Sediment Management Strategic Plan.

<u>Priority Goals</u>

The following goals provide cost-effective alternatives to increase our sediment storage capacity for the next 20 years.

1. Authorize the preparation of project concept reports for establishing new SPSs in the Santa Clara River region and in the Diamond Bar area as discussed in Section 3.2.3.

2. Authorize the continuation of working with the City of Irwindale, Vulcan Materials Company, United Rock, Nu-Way Rock, and Holliday Rock to develop agreements with them for placement of sediment at their various pits located throughout the foothill areas.

3. Create a part-time sediment manager position, similar to that of Public Works' railroad coordinator, who would broker sediment from Public Works' facilities to compatible use entities and coordinate outreach to communities impacted by cleanout operations. The sediment manager's tasks would include the following:

    a. During cleanout operations, work with various rock quarry operators, nurseries, "dirt brokers", and other end-users (see Table 3.5-1) to find alternative placement/uses of the sediment to divert as much material as possible from Public Works' SPSs. Seek to maximize utilization of the Savage Canyon (Whittier), Puente Hills (Industry) and Scholl Canyon (Los Angeles) Landfills, which accept clean fill dirt for free.

b. Develop a program to advertise the existing sediment stored within Public Works' existing SPSs and allow for private individuals to reuse the sediment. Concurrently implement the East Area SPS Capacity Optimization Program as described in Section 3.2.10 of this report.

c. Coordinate with Programs Development Division and Public Relations Group to identify and address end users' regulatory issues regarding material from the cleanouts, comply with regulatory requirements for the reuse of sediment in SPSs, and conduct outreach efforts to affected local residents.

4. Authorize the preparation of a study to explore the feasibility of placing sediment from debris retention facilities in the Santa Clara River area to locations in the structurally modified reaches of the Santa Clara River and its tributaries that are subject to scour from debulked flows. Potential locations to be investigated are identified in Section 3.2.8. The scope of the study will include cost benefit analyses and identification of applicable regulatory requirements.

5. Authorize the preparation of feasibility studies, cost benefit analyses, and other related investigations needed to provide goals on our inactive SPSs for: 1) sale as surplus property to fund SPS site acquisition in the Santa Clara River area; 2) use of property for mitigation credits; or 3) other purposes as described in Section 3.2.9 of this report.

6. Public Works should ensure that all of its existing SPSs are used at least once every two years. If no sediment cleanouts are conducted, the biennial usage would entail removal of sediment to free up storage capacity. Possible uses for the sediment include beach replenishment, beneficial material reuse/resale or agency requests for fill dirt (i.e. cities and contractors.)

3.2.2 Use of Abandoned Quarry Pits/Gravel Companies as SPSs

Public Works can reduce its sediment disposal burden by trucking the excavated debris basin material to interested users in lieu of placing it in its SPSs. There are numerous entities, including quarry operators, who have expressed interest in the material from the various debris retaining facilities and sediment placement sites provided the material meets certain specifications. Some of the possible locations where the sediment can be deposited are included in Table 3.2-1. Among these potential sites are Sheldon and Strathern Pits, which Public Works plans to acquire as part of its Sun Valley Watershed Management Plan.

Table 3.2-1
Potential Quarry Pits for Depositing Sediment

Facility Name	Owned By	Location	Material Requirements
Claremont Pit	Holliday Rock	Claremont	Yes (see Appendix A)
Olive Pit	City of Irwindale	Irwindale	Yes (see Appendix A)
Kincaid Pit	Cities of Irwindale & Azusa	Irwindale	Yes (see Appendix A)
Manning Pit North	LACDPW & the City of Irwindale	Irwindale	Yes (see Appendix A)
Sheldon Pit	Vulcan	Sun Valley	Yes (see Appendix A)
Strathern Pit	Los Angeles By Products	Sun Valley	Yes (see Appendix A)

Besides the geographical region that will be served by each quarry/pit, there are additional issues that will need to be addressed and agreements to be developed prior to the use of these pits. Additionally, some of the pits are subject to fees imposed by the State Waste Management Board and administered by Public Works for inert landfills, currently $0.86 per ton. These fees are deposited in Public Works' Solid Waste Management Fund. These fees along with any other regulatory requirement(s) will need to be factored into the overall placement costs. Over the past few years, Public Works has worked with several quarry operators to address fee payment issues for the Solid Waste Management Fund. The preliminary details of two such agreements between Public Works and quarry operators are outlined below:

One Irwindale quarry operator, Nu-Way, will spread and compact 3 million cubic yards of sediment in northern side of Manning Pit, which is owned by the City of Irwindale, or another nearby disposal facility, possibly including Kinkade Pit or Olive Pit. Public Works would truck the sediment to the pit. Starting tentatively in 2006, Public Works would deliver a minimum of 300,000 cubic yards annually of sediment for an initial five-year period to the City of Irwindale's side of Manning Pit. If Public Works cannot deliver the minimum annual quantity during the first five years, then the quarry operator will move material that is placed in Public Works' side of Manning Pit to the City's side at the rate of $1.50 per cubic yard (subject to the Consumer Price Index) to be paid to the operator to make up the shortfall. The payment to the operator would still benefit Public Works by increasing the capacity of its Manning Pit SPS. The City of Irwindale anticipates utilizing the reclaimed north side of Manning Pit for the construction of low income housing.

Another quarry operator in the Irwindale area, United Rock Products Corporation, has proposed that it will spread and compact up to 120,000 cubic yards of sediment annually in any one of three pits in Irwindale until a total of 500,083 cubic yards has been placed. An agreement is anticipated to be in place such that the spreading and compacting operations could begin in 2006 and end in 2016. Public Works would truck its excavated sediment to the pits.

Table 3.2-2 provides relevant information and requirements for using the pits identified in Table 3.2-1 for sediment placement operations. It is noted that with the tentative conditions proposed so far for the Manning Pit agreements, Public Works will gain an additional 40 years of sediment placement capacity in the Irwindale region.

Table 3.2-2
Conditions/Restrictions for Quarries/Pits prior to Accepting Fill Material

Facility Name	Prerequisites/Requirements
Pit in the City of Claremont	
Claremont Pit	• Owner: Holliday Rock • Current use: Inactive • Material must meet stringent requirements (see Appendix A). • Preferably Public Works forces would perform sediment placement work within the pit. Holliday Rock has objections to contractors performing this work. • Holliday Rock may seek compensation for accepting sediment. • This pit could be used for placement of excavated sediment from Live Oak and Thompson Creek Reservoirs. After sediment sampling is completed at Webb SPS, discussions for Holliday Rock to cost share in a SPS cleanout operation could be initiated. • Estimated capacity 800,000 cubic yards. • Earliest potential use date: 2006
Pits in the City of Irwindale	
Manning Pit - North	• Owner: City of Irwindale • Current Use: Inactive for over 8 years • Last used by the City of Irwindale in the 1990s. • The City of Irwindale plans to conduct a geotechnical investigation with borings to determine how it will address compactive issues with the 20 feet of fill previously placed. • The City of Irwindale will require material placed achieve 95 percent relative compaction to facilitate establishment of low income housing after the pit is completely filled. • Construction of an additional ramp is anticipated to improve dumping operations and safer ingress/egress to the site. • Estimated capacity 4,000,000 cubic yards. • Earliest potential use date – 2006.
Kincaid Pit	• Owner: City of Irwindale • Current use: Inactive • There are major drainage problems for this site. Previous attempts to fill and develop this pit were unsuccessful since it was determined to be economically infeasible to construct the required outlet storm drain and pump station system for the pit's storm inflows. This is necessary to avoid an increase in flood hazard to adjacent properties. • The City of Irwindale may require material placed achieve 95 percent relative compaction.

	• Existing access from Irwindale Avenue is inadequate for effective fill operations. Access improvements will need to be constructed (see Appendix D). • The City of Irwindale needs to prepare and approve an environmental document and apply for permits to operate the site. • Estimated capacity 500,000 cubic yards. • Earliest potential use date - 2007.
Olive Pit	• Owner: City of Irwindale • Current use: Inactive • The City of Irwindale may require material be placed to achieve 95 percent relative compaction. • The City of Irwindale needs to prepare and approve an environmental document and apply for permits to operate the site • Access improvements will need to be constructed. • Estimated time required to fill the pit exceeds 50 years. • Public Works will entertain working with the City of Irwindale to develop an interim multiuse plan for the pit during fill operations. This could possibly include soccer fields and groundwater recharge facilities. In partnership with the City, Public Works will coordinate with local water agencies to solicit funding for establishment of water conservation facilities during interim and project completion time periods. • Estimated capacity of 30,000,000 cubic yards (18,600 acre-feet) exceeds the capacity on all but 2 of Public Works' 15 reservoirs. • Earliest possible use date – 2008.
Pits in the Sun Valley Region	
Sheldon Pit	• Owner: Vulcan Materials • Current use: Filtration of water used in the company's batch plant processes and placement of unmarketable fines from their batch plant. • Sheldon Pit is part of Public Works' Sun Valley project. The Sun Valley Project EIR was certified by the Board of Supervisors on June 29, 2004. Watershed Management Division (WMD) is seeking grant funding to defray the pit acquisition cost and anticipates submitting its grant funding application for Sheldon Pit to the State by December 2006. The submittal will be contingent on the concurrence of the other Los Angeles River Watershed stakeholders involved in the grant program. It should be noted the other stakeholders ranked the grant application for acquiring Strathern Pit higher than that for Sheldon Pit. • Coordination with WMD will be essential for effective project implementation. • Vulcan requires the sediment be analyzed for metals, pesticides, herbicides, and other contaminants. • Vulcan desires to retain a portion of the pit for water filtration and will have specific requirements for where material can be placed

	within the pit. • Earliest potential use date – immediately if an acceptable analysis of our sediment is provided certifying it is clean. • Vulcan has indicated it needs 500,000 cubic yards of sediment for grading purposes in its Sheldon and Boulevard Pits over the next three years. Vulcan desires to process the sediment for aggregate. Hansen Spreading Grounds are adjacent to Vulcan's quarry and existing conveyor line. Discussions for obtaining sediment placement capacity in Vulcan's Sheldon Pit in exchange for the rights to Hansen Spreading Grounds excavated sediment should be initiated. • Sheldon Pit lies in the midst of an industrial area close to the 210 Freeway off ramp. Obtaining this pit for sediment placement purposes is considered a high priority as no residents will be affected by its use. • Estimated capacity 10,000,000 cubic yards.
Strathern Pit	• Owner: Los Angeles By Products Company • Tipping fee for inert fill is currently $90 per truckload. • Strathern Pit is proposed to serve as a detention basin in the approved Sun Valley Watershed Management Plan. WMD will be applying for a grant to purchase the pit. If grant funding is approved, WMD is planning to begin acquisition talks by March 2006. Acquisition of the pit could be completed in 2007 allowing Public Works to commence sediment placement operations. • The stakeholders in the Sun Valley Watershed Management Plan desire the pit to filled to its target capacity of 1.5 million cubic yards (918 acre-feet) for flood control purposes within two years after acquisition is completed. This would limit Public Works' window of sediment placement time at the pit. Factors affecting this target fill completion date are storage capacity at time of purchase and having the current owner continue to operate the pit as an inert landfill after the transfer until the target volume is reached. • Earliest potential use date – 2007. • The 2002 capacity cited in the EIR was 3,000,000 cubic yards. Since that time, a significant amount of that has been placed.

These six quarries/pits offer significant storage capacity, in fact much more than Public Works can utilize over the next 20 years. The issue thus arising is which facility should be employed as a SPS. The first condition to determine if the quarry/pit should be used is its proximity to the cleanout site. The shorter the distance the better. However, Public Works should consider using these alternative sites even if the distance is a little further than an existing Public Works SPS. The additional hauling costs can be offset by greater available storage capacity at a Public Works SPS for emergency cleanouts. The completion of the Project Concept Reports for the proposed Santa Clara River

SPSs will be able to determine the value (land acquisition costs excluded) of storage capacity at Public Works SPSs. The value of having storage capacity readily available is evident when looking at major cleanouts. For example, the costs of the recent cleanout projects at San Dimas and Big Dalton Reservoirs would have been significantly higher if not for the availability of space at nearby SPS's.

While proximity to the sediment retaining facilities is the major component in selecting which quarry/pit to utilize, there are other factors to consider. For example, the facilities in the Irwindale area are all owned by the City of Irwindale. Irwindale has indicated that its top sediment placement priority is the filling of Manning Pit North. For all sediment bound for placement in the Irwindale wasteshed, every attempt to accommodate the City's needs should be made. With advanced planning prior to Manning Pit North being brought up to finish grade, negotiations with the City of Irwindale should commence to determine which pit should be the next priority for filling operations. For those facilities in the Sun Valley Area, there are several unknown factors which could change priorities. The current tipping fees at Strathern Pit do not at first appear to render the site as a first choice. However, acquisition of Strathern Pit as part of the Sun Valley Project would make the pit Public Works' top priority in the Santa Susana Mountains Sedimentation Area. Claremont Pit has the sole distinction of being the only pit in its area making it a priority to service those sediment retaining facilities within its wasteshed.

The use of the facilities for diverting sediment that would have originally gone to a Public Works SPS requires the approval of other agencies/entities. Approval may hinge on the material meeting certain specifications or actual acquisition of the pit. While it may seem easier to haul the material to a Public Works operated SPS, this will only delay the inevitable need for additional placement capacity. If every attempt is not made to take advantage of these potential placement sites, the cost of future sediment management will significantly increase. As time goes on, more of Public Works' annual flood control budget is being spent on increasing maintenance costs on aging infrastructure and complying with increasingly stringent regulatory mandates. It is thus imperative that Public Works take a proactive approach in working with local quarry operators/owners to divert the sediment that otherwise would have been deposited within its existing SPSs. By prolonging the life of Public Works' existing SPSs, it is ensured that its greatest sediment management assets remain viable and ready for future major debris events.

3.2.3 Acquisition of New SPSs

While every attempt will be made to reduce the amount of sediment being placed at Public Works' existing SPSs, there is a still a need for new SPSs. These SPSs, in addition to addressing the capacity issue, could also address hauling issues. Looking at a County wide map of debris retaining facilities and available SPSs (Figure 3.2-1), it is evident that certain areas lack any nearby sediment placement facilities. Two areas in particular, Santa Clarita and Diamond Bar/Hacienda Heights, have annual debris production rates of 12,500 cubic yards and 5,300 cubic yards, respectively, for existing facilities. New development in the Santa Clara River region is estimated to add

825 cubic yards of debris production annually to the sediment placement needs. The existing facilities are quite some distance from a viable SPS (see Table 3.2-3).

To address this concern for future sediment cleanouts, it is recommended Public Works begin the process of acquiring suitable parcels for use as SPSs in the aforementioned areas. As the price of fuel and value of land continue to rise, it would likely be more cost-effective for Public Works to invest in new SPSs closer to its sediment retention facilities to reduce future cleanout costs and decrease the sediment storage capacity deficiency. Public Works' effectiveness in responding to emergency debris removal operations after major storm events should also improve.

Table 3.2-3
Debris Control Facility Information for the
Diamond Bar/Hacienda Heights and Santa Clarita Areas

Facility Type	Projected 20 year Debris Production Rates (cubic yards)*	Average Distance to Nearest Viable SPS**
Diamond Bar/Hacienda Heights Area		
6 Debris Basins	46,000	15 miles
24 Debris Retaining Inlets	60,000	15 miles
Santa Clara River Region		
6 Debris Basins	100,000	13 miles
117 Debris Retaining Inlets	147,000	13 miles
Projected production from new debris control facilities	330,000	13 miles

* These facilities are relatively new and historical data not available. Numbers provided are based on the 5% Assumption (See Appendix E)
** Average Distance is a rough approximation of travel distance from the DB to the nearest viable SPS.

Geographic Information Systems (GIS) data was utilized in the selection process for possible SPSs in the two areas lacking sediment placement capacity. The parcels were evaluated based on ease of access, storage capacity, adjacent property usage, and general feasibility. A field review of the candidates resulted in final selections.

<u>Diamond Bar Area</u>

For the Diamond Bar area, four adjoining parcels were selected. Roughly 100 acres in size, the area consists of two converging canyons with a capacity in excess of one million cubic yards. The properties are owned by the City of Diamond Bar and Pathfinder Community Association (the homeowners' association for the adjacent development). The parcel maps denote the property as a future park although its current topography doesn't lend itself to that use. It may be possible to offer the City and Association a quid pro quo. If Public Works was permitted to deposit material at the site until such time that a mutually agreed upon elevation is reached, Public Works would in turn work with Diamond Bar's Parks and Recreation Department to develop the property into a park site. This would allow Public Works to utilize the property with no upfront cost and then establish a fund over the next 20 or so years to pay for future

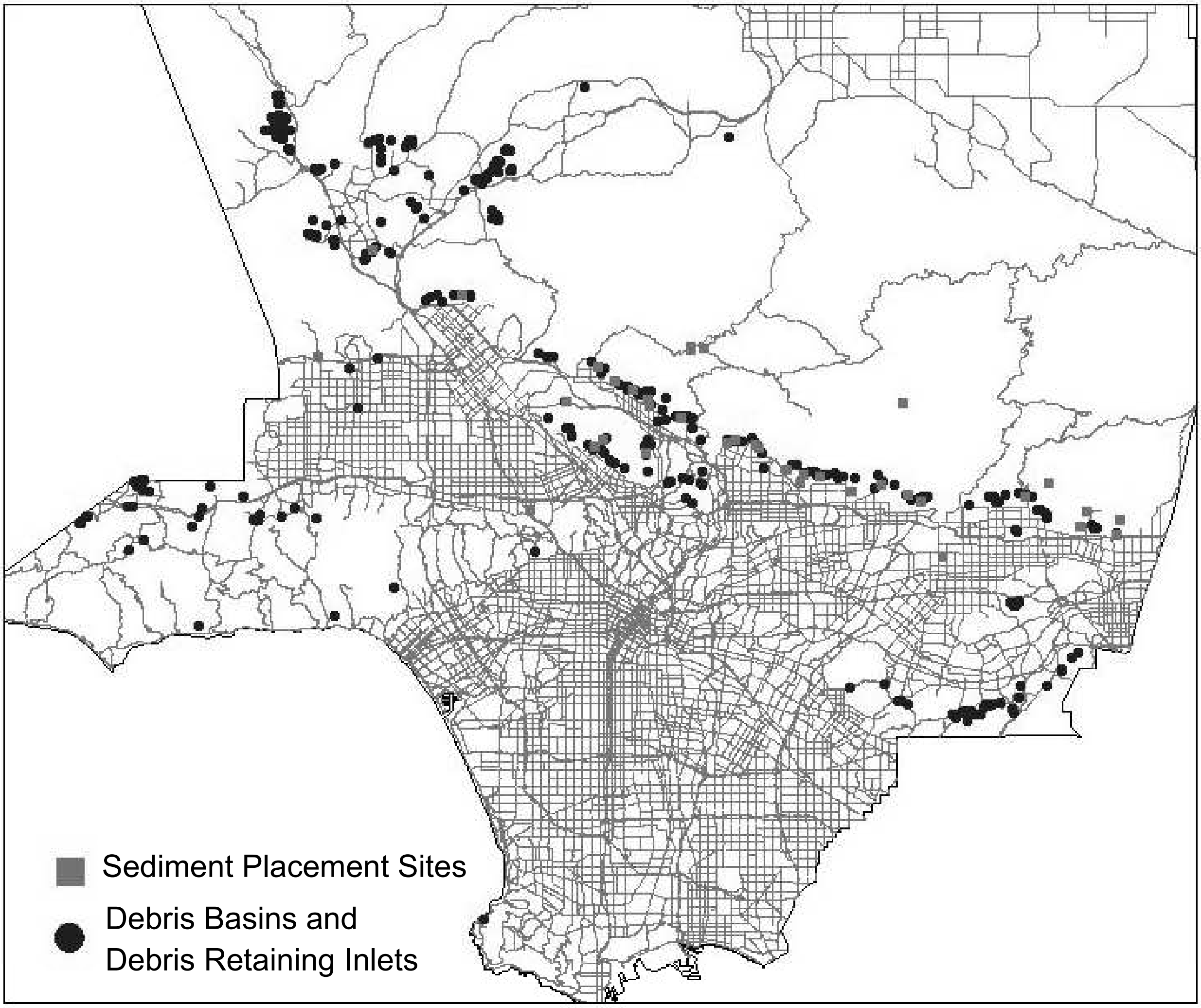

Figure 3.2-1
Debris Control Facilities in the County of Los Angeles

improvements. The location maps for these proposed sites are included in Appendix J and K.

Additionally, the City of Whittiers' Savage Canyon Landfill is currently accepting clean fill dirt for use as daily cover. Although the facility is some distance away from the debris retaining facilities of the Diamond Bar area, it is actually closer than Public Works' closest viable SPS, Manning Pit.

Santa Clara River Region

In selecting a potential SPS, it is important to take into consideration several key factors. However, proximity to debris retaining facilities is a major factor. The further material has to be trucked, the more expensive and time consuming a cleanout becomes. Access is another major factor. Locating the SPS off a major arterial and/or adjacent to a freeway would reduce the amount of time trucks would spend on surface streets. Adjacent land uses are also a consideration. Ideally, the site would be surrounded by vacant land causing minimal disruption to adjacent landowners. When locating new SPSs, it is important to consider conflicts and issues at existing SPSs and make every attempt to address those issues to avoid conflicts at the new sites. Finally, a SPS should be able to meet the sediment placement needs for a community without being considered a blight or eyesore on the community.

The location maps for the proposed Santa Clara River SPSs are shown in Appendix K. The cross sections and proposed fill areas are included in Appendix I. The detailed cost and feasibility information will be included in project concept reports for these sites.

Malibu Area

Road Maintenance Division has identified areas within the Malibu area to be utilized as sediment stockpile areas. Not necessarily SPSs, these areas typically located on parcels adjacent to the roadside would provide an area for Road Maintenance crews to place eroded sediment from canyon roads. When road shoulder repair and/or the need for material arises, Road Maintenance staff would then utilize that material. A map of the proposed areas is attached as Appendix G.

3.2.4 Policy for Inspecting Operations at SPSs

Work at SPSs is performed primarily when sediment placement operations are occurring. Sediment transported into a SPS from debris basin or reservoir cleanouts is brought to the site and placed per an ultimate fill plan. The ultimate fill plan is typically developed by Design or Water Resources Divisions (WRD) with input from Flood Maintenance Division (FMD). The plan will clearly show drainage improvements such as bench drains, underground drains, debris control structures, and other appurtenances. While the ultimate fill plan provides for the final drainage and grading of the site, the intermittent drainage and grading is a cooperative effort between the crews and supervisory staff who overlook the job. In most cases, it will take several years, even decades, to fill a SPS to capacity. Whenever the grade of a site is modified, surface flows are directed away from adjacent properties/structures and to a proper drainage course or drainage facility.

There are cases, however, when operations at a SPS are conducted in absence of a cleanout. The recent Williams Fire of 2002 brought about the construction of temporary debris basins within a SPS to capture the debris anticipated from one of the canyons the SPS will ultimately encroach into. Additional resources have been dispatched to SPSs during storm events to ensure debris flows are diverted away from adjacent properties and drainage devices at the site worked properly.

The actual process of placing sediment at a SPS is quite detailed. From the initial design to the hauling in of the sediment, each truckload of sediment is placed to ensure that the SPS functions safely and efficiently. A preliminary SPS Development Policy is provided as Appendix F.

3.2.5 Policy for Administering Major Sediment Cleanouts

After a major storm event, debris levels at Public Works' various debris retaining facilities and reservoirs are estimated. If the debris level in a basin meets the criteria for cleanout, FMD's Area Engineer coordinates with staff to undertake a cleanout. Typically, FMD forces implement the cleanout project on a force account basis utilizing vendor supplied haul trucks and other equipment. In some years, especially those after a major fire or wet storm season, the volume of sediment to be removed requires some of the basins be cleaned out by contract.

Reservoir sediment removal projects, usually overseen by a project manager in WRD, are contracted out due to the large volume of sediment to be removed. Exceptions to this occurred when sediment removal projects were undertaken by permittees at Eaton Wash, Devil's Gate, and Thompson Creek Reservoirs in the 1980s and 1990s.

Each cleanout methodology has its own set of administrative issues to address. The two distinct policies are outlined below in Sections 3.2.5a and 3.2.5b.

Before a cleanout can begin regardless of methodology, there are several important factors to be considered, namely where the sediment is to be placed and identifying a haul route to get it there. In terms of cost, it would be better to select the closest sediment placement site, but other considerations such as capacity may preclude its use.

After a SPS site is selected, the other major issue to address is the haul route. A haul route will be developed by FMD or WRD personnel to identify the most efficient routing between the sediment retention facility and the SPS. These preliminary haul routes are, in coordination with City Services Group, submitted to the local jurisdictions for approval. Often the local jurisdictions request realignment of the haul route away from school zones or other areas where traffic concerns may arise. Once the local jurisdictions approve the haul route, FMD or Construction Division staff will prepare leaflets to distribute to property owners along the route informing them of the upcoming hauling operation. The leaflets describe the need for the work, the problems they may encounter, contact information for questions or complaints and the timeframe of when hauling will take place. In some cases, publication of the haul route in local newspapers has been requested in order to notify the general public of the upcoming cleanout and haul routes. Once the hauling operation begins, problems/concerns may develop that may necessitate a realignment of the haul route or possibly use of an alternate SPS. These problems/concerns are addressed by FMD or Construction Division staff (as applicable), City Services Group, the contractor (if a contract cleanout), and the appropriate local jurisdiction as they arise.

3.2.5a Force Account Cleanouts

Force account cleanouts are coordinated by FMD staff. FMD staff coordinates with the affected Cities for the work and secure haul route permits prior to the start, if necessary. Force account cleanouts can begin rather quickly compared to contract cleanouts, which require preparation of plans and specifications, advertisement, and award of a contract. Force account cleanouts utilize both Public Works and rental equipment with oversight of the entire operation conducted by a FMD supervisor who ensures compliance with Public Works' regulatory permits.

Prior to the beginning of any work in a basin, dewatering and diversion of any incoming flows are crucial to provide a dry work site and ensure compliance with water quality requirements. The first step to dewatering a basin is to ensure the outlet tower is free of obstructions and allow water to drain from the basin. If the tower is clogged, boats may be utilized by personnel to access and remove any obstructions. Once the majority of the water is drained through the outlet tower, equipment is utilized to construct a finger of firm land from the basin's access road to the outlet tower. The material around the tower is then removed allowing for further drainage. To divert any additional flows, a diversion channel is cut from the upstream end of the basin along either side to the outlet tower. With all the flows have been diverted in the basin, the stockpiling and hauling of material can begin.

The number of rental trucks used is based on the haul route distance and the amount of material to be removed. Daily trip counts as well as a running total of cubic yards removed are kept by FMD staff. The excavation of the basin is carried out to the "As-Built" plan profile or to the cut template for the basin. Stockpiling of material is another effective tool in utilizing equipment efficiently. Considering the movement of material from the debris basin to the SPS can be a balancing act that may require modifying the number of trucks and equipment being used, adding a flag person at congested intersections, and creating larger stockpiles until finally the operation runs efficiently.

Appendix B contains a map showing a group of wastesheds in the County of Los Angeles depicting sediment retention facilities and their closest established SPS. This map and the SPS Information Sheets (contained in Appendix F of the Strategy 1 Report) provide pertinent information (i.e. capacities, haul distances, etc.) for Public Works staff to use in selecting an appropriate SPS for cleanouts. However, other constraints such as construction activities along the haul route and community concerns will need to be considered at the time of selection.

3.2.5b Contract Cleanouts

Reservoir and larger debris basin cleanouts are conducted by a contractor. Design plans prepared by Design Division are comprised of an excavation plan and SPS fill plan, if necessary. Construction Division will prepare the project specifications, in coordination with Design Division, and advertise and award the contract. The contractor will remove the sediment per the excavation plan under the oversight of Construction Division inspectors. The contract usually allows for the contractor to haul the material to our SPS or to broker the material for use by others. However, Public Works specifications always designate a deposition area of last resort. For instances where brokering of the material is not feasible for cleanouts in remote locations, the deposition site will most likely be a SPS. The contractor performs the cleanouts in a manner similar to that described in Section 3.2.5a. Once the contractor has completed the work, Construction Division must accept the work prior to making the final payment, whereby the facility is left in a state ready to accept additional sediment.

3.2.5c SPS Cleanouts

In addition to debris basin cleanouts from time to time Public Works may also clean out sediment accumulated at its SPSs. These cleanouts can either be done by force account or through a contract/permit process. SPS cleanouts are conducted less frequently than debris basin cleanouts. However, over the years, ten percent of the sediment volume placed in our debris basin SPSs has been removed in SPS cleanout projects.

Past SPS cleanouts have been conducted by local agencies and contractors in need of fill for developments, road construction, landfill closures, or other projects. With the removal of material from the SPS, proper grading and drainage needs to be maintained to ensure erosion is kept to a minimum and the integrity of the SPS is maintained. Construction Division issues a permit for the sediment removal work. The Construction Division Permit Inspectors or the FMD Construction Superintendent will conduct oversight of the cleanout. Upon completion of the material removal, a final evaluation of the SPS will be undertaken by FMD staff to ensure that drainage is satisfactory.

3.2.6 Policy for Maintaining Temporary Sediment Management Structures

Temporary sediment management structures are typically constructed or installed after a fire to keep mud/debris flows away from buildings or from impacting drainage structures not designed to carry debris flows. There are primarily three assemblies utilized: the rail & timber-structure; timber deflector walls; and precast concrete rails (Caltrans Type K Rail, a.k.a. “k-rails”). Rail and timber structures, constructed per Public Works Standard 3085-1, are installed to retain sediment from burned watersheds. Timber deflector walls and k-rails are installed to direct flows away from buildings and towards less hazardous and manageable flow paths. Often these structures direct flows to nearby streets for easier debris removal either by Public Works' personnel or local street maintenance jurisdiction.

Any structure constructed, maintained, and removed in a streambed that is denoted by a blue line in the USGS Quadrangle Maps will require compliance with Sections 404 and 401 of the Federal Clean Water Act and Section 1602 of the State Fish and Game Code. As a result, permits from the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, and the California Department of Fish and Game, respectively, may be required to cover the structures' installation, maintenance (including periodic removal of sediment accumulated behind them), and removal if the law or agencies' regulations do not exempt these activities. Any structure constructed on or requiring access through land not owned by the Los Angeles County Flood Control District will require authorization from the landowners.

All of these structures remain in place until the burned watershed recovers and the mudflow potential diminishes to prefire levels (typically four to five years after the burn). They require annual inspection and upkeep and periodic removal of sediment behind them to ensure proper operation. For example, rail and timber structures are inspected prior to the storm season via work orders generated by the Maintenance Management System (MMS). The inspection ensures that all u-bolt connections and timbers are intact. Concrete footings and abutments are also inspected. To avoid adverse impacts during the eventual removal of the structure, vegetation reestablishing itself around the structural members and within the accumulated sediment is removed and, where allowed, herbicide is applied to minimize regrowth.

In the fourth year of watershed recovery, FMD and WRD will coordinate with Mapping and Property Management Division (MPM) to secure any necessary access rights for the maintenance and removal of the structures. FMD will schedule and undertake the removal of the structures identified by WRD as no longer necessary and in accordance with the methods developed in conjunction with WRD.

3.2.7 Practice for Measuring the Allowed 5 Percent Organics Content in SPSs

Current regulations prohibit Public Works from placing material containing more than five percent organics at Manning Pit, Sunset Lower, Sunset Upper, and Dalton SPSs. To comply with this restriction, Public Works samples the material for organic content prior to deposition at any of these facilities. As a general rule, the same limitations on organic content are applied to material slated to be deposited at another Public Works' SPS. Adhering to this policy at other Public Works SPSs will ensure compliance if future regulatory restrictions expand to include them.

The current practice for measuring the percentage of organics begins with a request from FMD to Geotechnical and Material Engineering Division's Laboratory. FMD staff collects the samples and transports them to the Materials Lab. Twenty pounds of samples are collected in plastic trash bags. Depending on the size of the basin being sampled, one sample is taken 25 to 50 feet upstream of the basin's outlet tower and another taken 50 to 100 feet upstream. Materials Lab staff conduct an organic content test per ASTM D 2974-87, a copy of which is included in the report as Appendix H. Results are obtained within 48 to 72 hours depending on the moisture content of the samples. The Materials Lab staff transmits the results to FMD staff, who then determine where to place the material. Almost always, the organic content falls under the five percent maximum.

3.2.8 Goals for each Sedimentation Area

Sediment Area I – The Santa Monica Mountains

The Santa Monica Mountains area, while heavily developed in the low-lying areas, has had relatively little development in its mountainous and foothill areas. This situation has resulted in the construction of only 26 debris retaining facilities. Of those, five are debris basins with the remainder consisting of the smaller debris retaining inlets. The area currently has two SPSs available for sediment placement: Public Works' Aqua Vista SPS in Toluca Lake and the privately owned and operated Calabasas Landfill in Calabasas. Aqua Vista SPS has not recently been used and has a capacity of 12,100 cubic yards. In order to meet the needs for the next 20 years within Sediment Area I, we recommend the following:

- Remove material from Aqua Vista SPS to regain the facility's original 40,800-cubic yard capacity and coordinate with Watershed Management Division as required. Possible uses for the excavated material include adjacent city or private projects in need of fill.

- When preparing for future debris retention facility cleanouts, meet with County of Los Angeles Department of Beaches and Harbors to discuss possible use of material as beach replenishment. As an alternative to using Aqua Vista SPS, implement a SPS development fee program for the area to establish SPSs to service future development in the area.

- Work with private property owners and other County Departments and the incorporated Cities in the Santa Monica Mountains to establish sediment stockpile sites for Road Maintenance operations. Staff has identified potential sites at Camp Kilpatrick, Mulholland Highway, and Malibu Canyon Road as discussed in the Strategy 1 Report. Key tasks to be completed for the establishment of sediment stockpile sites at these locations is: completion of project concept reports, environmental document preparation, and Right-of-Way acquisition.

Sediment Area II – The San Gabriel Mountains

The San Gabriel Mountains area, unlike the Santa Monica Mountains area, is heavily developed in the foothill regions. The majority of Public Works debris retaining facilities lie within this area. There are numerous SPSs to support their operation, but their available capacities or the inability to use some of the facilities due to adjacent property owner complaints have greatly hampered sediment management in the area. Road Maintenance District 1 uses existing SPS facilities for roadway sediment disposal. We recommend significant changes in both policy and procedures be pursued to provide for the sediment management needs for the next 20 years:

- Remove material from San Dimas and Dalton SPSs, which are currently filled to maximum capacities. Approximately 500,000 cubic yards of material was removed from these SPSs in the late 1990s by permittees. As a lower priority, material from Santa Anita, Sawpit, and Lincoln SPSs should be removed to provide capacity for emergency debris retaining facility cleanouts. These removal projects will require Public Works to prepare environmental documents and obtain permits.

- For all future debris retaining facility cleanouts, consult with local quarry operators, landfill operators, and dirt brokers to find alternatives to placing at Public Works SPSs.

- Coordinate with the City of Irwindale to develop a program for the reclamation of Manning North, Olive, and Kincaid Pits, thereby reducing the demand on Public Works SPSs.

- Complete project concept reports on proposed SPS sites in the Diamond Bar area as described in Section 3.2.3.

- Develop and implement an action plan to utilize the center section of Santa Anita SPS, which still has a 3,000,000-cubic yard capacity. Implementation will require environmental documentation and permit acquisition.

- Coordinate with local jurisdictions to obtain prior approval of haul routes for future cleanouts.

- Coordinate with entities interested in undertaking permittee sediment removal operations in Public Works' less remote reservoirs and larger debris basins. Public Works would need to undertake the needed environmental documentation and obtain the necessary regulatory permits before it can issue permits to interested entities. The cost savings associated with no-fee material removal by the entities and the conservation of SPS capacity would likely justify the cost of undertaking the needed environmental documentation and permit acquisition.

- Investigate the feasibility of constructing within Big Dalton Wash a rail line that can convey sediment from Dalton SPS and the retired Big Dalton SPS to Manning Pit. The study should look at using Big Dalton Spreading Grounds and Manning Pit, already owned by Public Works, as staging/stockpiling areas.

<u>Sediment Area III – Santa Susana Mountains</u>

The Santa Susana Mountains area's 46 debris retaining facilities, with an annual production of 95,000 yards[1], are serviced by Browns SPS, which has a remaining

[1] Based on the 5 percent of capacity assumption for annual sediment generation (see Appendix E).

capacity of 134,000 cubic yards. Sunset Upper, Sunset Lower, La Tuna, and Deer SPSs also within the area, are inactive, but could service the area's sediment needs if additional authorizations are obtained. Goals for this area are as follows:

- Acquire either Strathern or Sheldon Pit as a component of the Sun Valley Project for sediment placement.

- Coordinate with Vulcan to excavate Hansen Spreading Grounds in accordance with the approved improvement concept for the facility.

- Coordinate with Vulcan to provide material for their reuse.

- Initiate the process to obtain the necessary authorization to activate Sunset Lower, Sunset Upper, and La Tuna SPSs.

<u>Sediment Area IV – Santa Clara River</u>

The Santa Clara River area is experiencing a tremendous development boom. Facilities are being constructed and transferred on a monthly basis. With over 120 debris retaining facilities already in place and only one sediment placement site within a 15-mile radius, this area has a significant disposal deficiency. In order to provide for timely emergency cleanouts, it will be necessary to obtain additional site(s) in the area for use as SPSs.

Also, as discussed in Section 3.4, there are locations in structurally modified reaches of the Santa Clara River and tributaries that undergo scour and erosion, possibly from flows debulked by upstream debris retention facilities (see Table 3.4-3 for examples of these locations). To offset this impact, it may be beneficial to place sediment from local cleanout operations at these affected locations.

Therefore, we recommend the following:

- Prepare project concept reports for establishing new regional SPS sites as identified in Section 3.2.3.

- Coordinate with entities such as local quarry operators, nurseries, landscape contractors, and "dirt brokers" who are in need of material to find a beneficial reuse for the material deposited within Public Works' debris retaining facilities.

- Develop a program to require developers, either through right-of-way dedication or in-lieu of fees, to provide SPS capacity to service the debris control facilities they will be transferring to Public Works.

- Investigate the feasibility, including the identification of regulatory requirements and compliance, of implementing a program to place sediment at locations along the Santa Clara River and tributaries that are subject to scour and erosion.

<u>Sediment Area V – Antelope Valley</u>

Road Maintenance Division has a gravel pit that is utilized for sediment disposal in this region. Road Maintenance also obtains permits from the Forest Service for roadway sediment disposal within the Angeles National Forest. Road Maintenance should also continue with their current efforts in this area. The Antelope Valley area of the Los Angeles County Flood Control District has no debris control facilities and no significant future development anticipated over the next 20 years. Consequently, we recommend no action be undertaken at this time for this area as part of this sediment management plan.

3.2.9 Utilizing Inactive SPSs for Financial and Mitigation Purposes

Public Works currently owns 33 parcels designated as SPSs as listed in Appendix L. Ten of these SPSs are not viable due to their capacities being reached, lack of access, environmental issues, and/or regulatory concerns (see Table 3.2-4). While it may not be cost-effective to use some of these parcels as a future SPS, every effort should be made to tap into the parcels' intrinsic value for other mission critical operations of the Flood Control District. The possibility of using those SPS parcels in ways other than originally intended should be investigated. Two methods with which to tap into a property's value include sale of the parcel to private investors/conservation groups or the deeding of the parcel as a perpetual conservation easement, providing Public Works with mitigation credits for future projects.

Table 3.2-4
Sediment Placement Sites With Operation Obstacles

Facility Name	Obstacle(s) to Facilities Operation
Auburn SPS	Small capacity and poor access
Bailey SPS	Used as a park
Eaton SPS	Filled to capacity
Las Flores SPS	Small capacity and poor access
La Tuna SPS	Community opposition halted permitting in the 1980s
Live Oak SPS	Never utilized
Rubio SPS	Small capacity and poor access
Sunset Lower SPS	Never utilized
Sunset Upper SPS	Never utilized
Shields SPS	Filled to capacity - possible library site

<u>Sale of Parcels</u>

Selling of Flood Control District property should take into account several factors. Of utmost importance is the need to achieve consensus among Public Works Divisions to ensure no present or future flood control system operational problems will result from the sale of the parcel. In particular, the future potential uses of the parcel for staging area, mitigation banks, or other purposes must to be evaluated. A cost/benefit analysis to establish and permit a SPS at each unused parcel should be performed prior to the consideration of a sale. In addition, an investigation as to the consequences of the sale and possible repercussions should also be evaluated. The proceeds from any sale could be utilized to purchase land for establishing new SPSs in the Santa Clara River region as discussed in the Strategy 2 Report of the Sediment Management Strategic Plan.

Live Oak SPS located in the City of Claremont, as shown on Figure 3.2-2, has never been utilized. The parcel has good access from a public street, New Live Oak Canyon, and is adjacent to the newly constructed Route 210 Freeway. The parcel could possibly be developed into a hillside residential community. Approximately one-half mile from Live Oak SPS is Webb SPS, a moderately utilized SPS with a design capacity equal to roughly twice that of Live Oak SPS. While Public Works will lose the 300,000-cubic yard capacity Live Oak SPS offers, the financial gain from the sale of the parcel may make it possible to acquire a site with significantly larger capacity in a less costly area or provide for the cleanout of adjacent SPSs, thereby recapturing that capacity.

<u>Mitigation Credits for Unused SPS Properties</u>

The Tujunga Wash Mitigation Bank, located in the Sun Valley area, has provided Public Works with needed mitigation credits required for the implementation of our reservoir sediment removal and soft bottom channel vegetation maintenance projects. Conversion of a SPS to a mitigation bank would provide additional credits that could be utilized for future maintenance projects for our flood control facilities requiring mitigation. The potential benefits or credits for designating our SPSs as open space will also be evaluated in cooperation with the regulatory agencies and local conservancy groups. Scrutinizing analysis should be undertaken to ensure this use of Flood Control District property is judicious and will not negatively effect Public Works' operations.

La Tuna Sediment Placement Site, one of the larger parcels at approximately 60 acres, as shown on Figure 3.2-3, is a candidate unused SPS for use as a mitigation bank. Attempts were made to finalize an environmental document to utilize the site as a SPS in the 1980s. However, the process was suspended due to stakeholder opposition. The parcel includes several steeply sloped canyons, which do not lend themselves to development unless extensive grading is undertaken. The parcel is also landlocked making it even less desirable for a developer. However, the parcel's pristine habitat may be well suited to provide mitigation credits.

Appendix L is a listing of the 33 SPSs owned by Public Works along with their current capacities, distance to adjacent SPSs, the sites potential for either sale or deed restrictions as well as other pertinent information

3.2.10 East Area SPS Capacity Optimization Program

As discussed in Section 3.2.3 of this report, for the next 10 years, sediment from FMD - East Area flood control facilities will be delivered to Manning Pit North and other quarries in Irwindale to satisfy pending agreements with the Solid Waste Management Fund and quarry operators. During this time period, our East Area SPSs will be virtually

Figure 3.2-2
Aerial Photo of Live Oak SPS Property

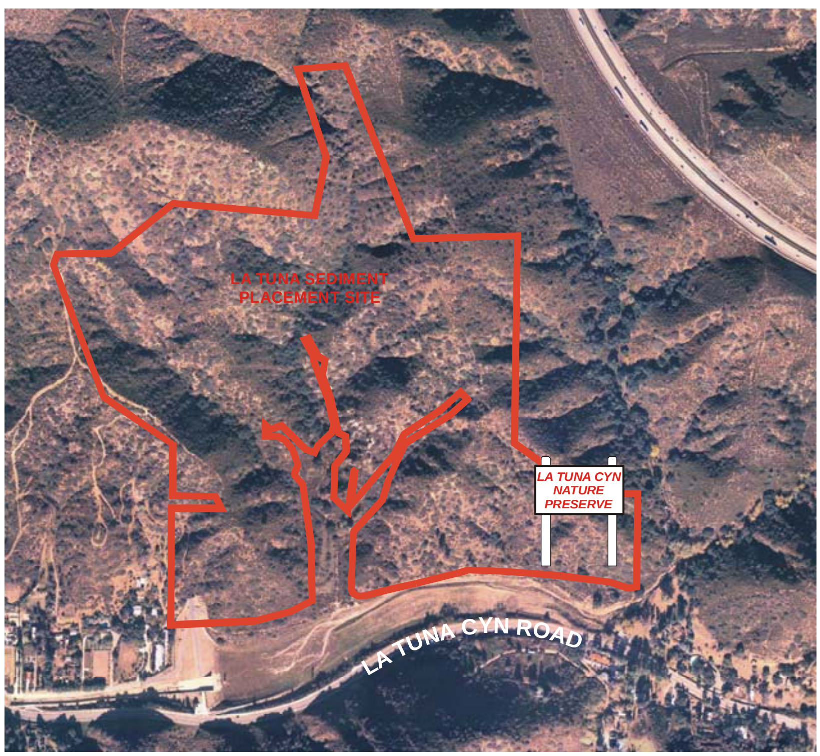

Figure 3.2-3
Aerial Photo of La Tuna SPS Property

inactive since they will be receiving little if any sediment from our flood control facilities. These SPSs include Dalton, Hastings Canyon, Eaton, Lincoln, Webb, Santa Anita, and San Dimas SPSs. Other East Area SPSs could be added to the list

The proposed East Area SPS Capacity Optimization Plan calls for implementing sediment removal projects at these temporarily inactive SPSs with permittees over a 10-year period. The exception to this proposal could occur in a major storm season, which would require use of these SPSs.

The strategy strives to:

- Incrementally remove sediment annually from our SPSs to increase storage capacity when the SPSs are inactive.

- Establish a "routine" maintenance activity at our SPSs of periodically removing sediment to maintain capacity. It is noted there are exemptions from the California Environmental Quality Act (CEQA) for routine maintenance activities.

- Initiate and establish a borrow fill operational policy at our SPSs. For the long-term operations of the flood control system, this is a requisite activity. A few pivotal SPSs in the East Area (Dalton, San Dimas, Eaton) are filled to capacity. The window of opportunity to practicably establish new SPSs in a cost-effective manner along the San Gabriel Mountain area may be disappearing. Stakeholder opposition against permitting new SPSs is anticipated to increase. Prudence dictates we strive to maximize capacity in our existing facilities in concurrence with our efforts to establish new SPS sites in the Santa Clara River region.

- Maintain our facilities in a cost-effective state of operational readiness for occurrence of a capital storm. It is noted that during the 1968-69 storm season, 18 million cubic yards of sediment were deposited in Public Works' reservoirs and debris basins. This sediment volume would rise to a height of two miles if placed on a football field. The effectiveness of our East Area SPSs hinders their ability to respond to a recurrence of an event of this magnitude.

- Provide cost savings for future cleanout activities. Maximizing capacity in our East Area regional SPSs will reduce sediment transport cost when these facilities are required for placement of excavated sediment from nearby debris and flood control facilities.

Following are elements that will be included in the final SPS capacity optimization program:

- Perform geotechnical evaluation of the sediment at the selected SPSs for cleanout. FMD will employ a backhoe to dig one or more 10-foot deep test trenches for sampling each SPS. Photographs of the trench wall will be taken. Three samples at depths of 2 feet, 5 feet, and 8 feet will be taken. GMED will perform a sieve analysis, organics content, and sand equivalents tests on the samples taken from the trench.

- Develop a web page to provide all the relevant background information on the proposed permittee removal project. Include permit information, SPS location maps, haul routes, current sediment analysis information, and historical sediment analysis information.

- Develop and implement a public outreach program to convey the following aspects of this needed SPS capacity optimization program to the public.

  - Reduce riparian habitat takes and reductions in open space due to establishment of new SPSs in the San Gabriel Mountains. The maximizing of capacity in our existing East Area SPSs will reduce the need to establish new SPSs in canyon and foothill areas in this region.

  - Enable Public Works to effectively use our SPS network with available capacity to properly respond to major debris production events similar to those that occurred during the 1968-69 storm season.

- Permittee participation: Encourage perspective permittees to participate in this venture and establish a long-term SPS cleanout program to remove 2.7 million cubic yards of sediment from eight SPSs over a 10-year period in accordance with the following guidelines:

  - Years 1 and 2:
    Utilize two weeks of sediment removal at each SPS annually.
    The daily sediment removal rate would be 2000 cubic yards.
    Each SPS gain 20,000 cy of storage capacity in two weeks.
    The goal would be to keep the permittee's truckers busy and have the sediment removal work progress from one SPS to another every two weeks. 320,000 cubic yards of sediment would be removed from the eight SPSs in two years.

  - Years 3 and 4:
    Utilize three weeks of sediment removal from each SPS annually.
    Each SPS would gain 30,000 cubic yards storage capacity in three weeks. 240,000 cubic yards of total sediment removed from the eight SPSs annually.

  - Years 5 - 10
    Four weeks of sediment removal from each SPS removing 40,000 cubic yards. 320,000 cubic yards of total sediment removed from the eight SPSs annually.

3.2.11 General Goals

While it is difficult to maintain a large flood control system operation within a heavily populated area, the following general goals were developed to better serve the needs of local residents while ensuring the work is done as cost effective as possible.

- During large cleanouts or hauling operations, provide local residents along haul routes with certificates for car washes from the local car wash purveyor. This will help alleviate many complaints from residents.
- Create a website within www.lacdpw.org detailing the SPSs and their current sediment availability (to be updated by WRD) along with contact information for interested parties.
- List available fill material on the Los Angeles County Material Exchange Website http://ladpw.org/epd/lacomax/index.cfm
- List available fill material on the State of California Material Exchange Website http://www.ciwmb.ca.gov/calmax
- Issue press releases through Public Relations detailing Public Works' desire to find individuals or companies interested in acquiring fill material noting the above-mentioned website.
- Continue to coordinate with the County of Los Angeles Department of Beaches and Harbors to determine a stockpile location(s) for the agency's beach sand replenishment effort.

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COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3.3

Investigate Utilizing Landfills for Sediment Storage Including State Regulations and Using Sediment as Daily Cover

January 2006

Sediment Management Strategic Plan – Strategy 3 Report
Action Step 3.3: Use of Landfills for Sediment Deposition

3.3.1 Introduction

This section evaluates the use of landfills as an alternate method for the disposal of sediment. It includes a summary of findings and recommendations. The recommendations listed take into consideration disposal costs, landfill laws and regulations, how sediment is used at the landfills, and the effects disposal at the landfills will have on the County in regards to the State's 50 percent waste reduction mandate.

Key Recommendations

The following recommendations will permit Public Works to utilize its sediment from various facilities at local landfills for daily cover. Besides assisting the local landfills with much needed daily cover, the benefit of diverting sediment away from SPSs and the reduced cost in not requiring resources and equipment at the placement site will actually provide a cost savings to Public Works.

1. There are three landfills, Savage Canyon in Whittier, Puente Hills in the City of Industry, and Scholl Canyon in Los Angeles, that accept clean fill dirt for free. The amount and hours of operation vary by landfill and need to be confirmed prior to any hauling operations. Coordination with landfill staff prior to any hauling is highly recommended.

2. Utilize inert landfills, which are not required to have a Solid Waste Facility Permit or which will fall under the Enforcement Agency Notification tier. This will avoid higher disposal costs and will not count against the County for the purpose of complying with the State waste reduction mandate. Currently, these include:
   - Arcadia Reclamation in Arcadia
   - United Rock in Irwindale
   - Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley
   - Strathern in Sun Valley
   - Atkinson Brick Company in Los Angeles
   - Chandler's Landfill in Rolling Hills Estates

3.3.2 Review of the Best Practices Survey Results

Public Works' survey revealed other public agencies throughout California utilize landfills for sediment disposal, including the City of Los Angeles, County of Marin, County of Riverside, County of San Diego, County of San Joaquin, Santa Clara Valley Water District, and the U.S. Army Corps of Engineers. The Santa Clara Valley Water District and the Corps reported disposing of the most sediment in landfills, approximately 80,000 and 100,000 cubic yards per year, respectively. However, none of the jurisdictions were aware if the sediment was being beneficially used at the landfills for their operations.

Currently, Public Works is transporting some sediment and debris from the basins and roadways to landfills, including Puente Hills, Scholl Canyon, Calabasas, Antelope Valley, and Chiquita Canyon.

3.3.3 State Waste Reduction Mandate

The State waste reduction mandate was established with the enactment of the California Integrated Waste Management Act of 1989, also known as Assembly Bill 939 or AB 939. AB 939 requires all cities and counties to divert 50 percent of the waste generated from disposal at landfills and incineration facilities. Noncompliance can subject the jurisdiction to a penalty of $10,000 per day. While the County of Los Angeles has implemented numerous award winning waste diversion programs, it has not been able to demonstrate achievement of the 50 percent diversion rate.

The County has been granted a time extension to achieve the 50 percent waste diversion mandate. The time extension requires the County to implement additional measures and programs to meet this mandate. To assist in this effort, Public Works should minimize the amount of sediment sent to those landfills where it would count as disposal against the County.

3.3.4 Types of Landfills

The landfills that can be used for disposal of sediment can be classified into two types, municipal solid waste (MSW) landfills and inert landfills. MSW landfills are ones which accept all solid wastes, including decomposable wastes generated by residential, commercial, and industrial sources, and all solid waste generated at construction and demolition sites, food processing facilities, and water and wastewater treatment facilities. Inert landfills are those which accept inert waste only.

The State recently adopted regulations that place inert landfills into regulatory tiers. This tiered system will result in new restrictions on materials to be deposited in the inert facilities. A review of the regulations for these facilities and the pros and cons of using each type of facility is discussed. A complete listing of landfills in the County of Los Angeles is in Table 3.3-4.

3.3.4a Municipal Solid Waste Landfills

MSW landfills accept a wide variety waste and charge more for disposal than inert landfills with fees varying from $20 to $55 per ton. However, some landfills will accept soil at no charge. This soil must not be mixed with other materials or debris. It is usually used by the landfills for their operations, like daily cover and access roads. Therefore, often this soil is not counted as disposal. The acceptance and use of soil for the landfills depends on site specific conditions such as the availability of on-site excavation materials and the use of alternative cover materials. Utilizing the MSW landfills which do not charge for disposal of soil could help to extend the life of our sediment placement sites.

Table 3.3-1
Municipal Solid Waste Landfills in the County of Los Angeles

Landfill	Sediment Area	Accept Soil At No Cost
Antelope Valley Landfill in Palmdale *	5	No
Bradley Landfill in Sun Valley	2, 3	No
Calabasas Landfill in Agoura *	1, 3	No
Chiquita Canyon in unincorporated area of Valencia *	4	No
Lancaster Landfill in Lancaster	5	Yes
Puente Hills Landfill in Whittier *	1, 2	Yes
Scholl Canyon Landfill in Glendale *	2	Yes
Sunshine Canyon Landfill in Sylmar	2, 3, 4	No
Whittier (Savage Canyon)	2	Yes

***** Landfills used by Public Works

Currently, Public Works places sediment at existing SPSs. However, debris or sediment mixed with debris is disposed at selected MSW landfills. Sediment with a high debris content taken to these facilities does count against the County in respects to the State waste reduction mandate.

3.3.4b Inert Landfills

There are currently several landfills which fall under this category. The major distinction between them is whether or not they have a Solid Waste Facility Permit or Registration Permit. The State currently considers waste deposited in a facility that has either type of permit as disposal. Therefore, disposal of sediment at these facilities will count against the County in meeting the State waste reduction mandate. Waste sent to inert facilities, which do not have either a Solid Waste Facility Permit or a Registration Permit, is not counted as disposal.

The State has adopted regulations which place all inert facilities in a regulatory tier system. Facilities which fall under the Inert Debris Engineered Fill Operation category will be placed in the Enforcement Agency Notification tier. Inert debris deposited in these facilities will not be considered disposal. Other facilities which do not fall in this regulatory tier may fall in the Registration or Full Solid Waste Facility Permit tiers. Material deposited in these facilities will be considered disposal and count against the jurisdiction in which it originated.

The Local Enforcement Agencies for the State are currently in the process of placing inert facilities in their regulatory tiers. While an exact date for completion of this process is not available, it is anticipated the facilities will soon be placed in their respective tiers in 2005. Inert landfills would likely be placed in the Enforcement Agency Notification tier as they are subject to less stringent regulatory requirements, including not being required to pay the State's $1.40 per ton solid waste fee. This would also help the County to meet the State's waste reduction mandate.

The Local Enforcement Agency has also reported that in the process of placing facilities in their regulatory tiers, they are discovering additional facilities. The recommendations for the use of landfills for sediment placement take into consideration these additional facilities.

Table 3.3-2
Inert Landfills in the County of Los Angeles

Landfill	Sediment Area	SWF Permit
Atkinson Brick Company in Los Angeles	1, 2	No
Arcadia Reclamation in Arcadia	1, 2, 3	No
Azusa Land Reclamation in Azusa	2, 3	Yes
Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley	1, 2, 3, 4	No
Chandler's Landfill in Rolling Hills Estates	1, 2	No
Hanson Aggregates (Livingston-Graham Landfill) in Irwindale	1, 2	No
Nu-Way Live Oak Landfill in Irwindale	2	Yes
Peck Road Gravel Pit in Monrovia	2	Yes
Reliance Pit #2 in Irwindale	2	Yes
Strathern in Sun Valley	1, 2, 3, 4	No
United Rock in Irwindale	1, 2	No

The use of inert landfills is a good option for preserving the life of SPSs. Disposal costs at these facilities are generally lower than at MSW landfills. For example, Strathern in Sun Valley charges $90 for a truck load of soil weighing 17 tons while disposal at Sunshine Canyon Landfill would cost about $700 for the same load. Also, the deposition of the material at facilities which do not currently have a Solid Waste Facility Permit does not count as disposal. It will also not count as disposal in the future for operations under the Enforcement Agency Notification regulatory tier.

Environmental Programs Division (EPD) will update Table 2 and Table 3 in this Section after the Local Enforcement Agency places the inert facilities in their regulatory tiers. This may also lead to modification of the recommendations on which landfills to use for each area. In addition, there is a possibility that additional landfills will allow the County to place soil in their facility at no cost. EPD will also modify the recommendations for which landfills to use accordingly.

Note, landfill costs for disposal are subject to change without notice. Also, a recent survey of landfill sites determined Puente Hills landfill has a maximum capacity of 500 trucks per day, which should be taken into consideration when utilizing this facility for sediment disposal. Furthermore, the County Sanitation District will accept rock within the soil but no more than 10 percent, which is up to the discretion the facility's Weighmaster.

3.3.5 Evaluation and Recommendation For Using Landfills For Sediment Disposal

There are several issues that should be considered in determining if and when sediment should be disposed at landfills. These include costs of disposal, whether the material will be considered disposal by the State, the life expectancy of the landfill, and the daily capacity at the landfill.

The evaluation shown on Table 3.3-3 is for sediment which is not mixed with debris. Sediment mixed with debris and other waste cannot be disposed in inert facilities or SPSs.

Table 3.3-3
Quantitative Evaluation of County of Los Angeles Landfills

Facility	City	Facility Type	Cost Rating	Restriction	Disposal	Life Exp	Total Points	Area
Chandler's Landfill	Rolling Hills Estates	Inert	3	5	5	*3	16	1
Azusa Land Reclamation	Azusa	Inert	4	4	1	5	14	2
Hanson Aggregates (Livingston-Graham)	Irwindale	Inert	Unknown	5	5	*3	13	2
Nu-Way Live Oak Landfill	Irwindale	Inert	4	4	1	2	11	2
Peck Road Gravel Pit	Monrovia	Inert	4	2	1	5	12	2
Puente Hills	Whittier	MSW	5	4	1	2	12	2
Reliance Pit #2	Irwindale	Inert	4	4	1	5	14	2
Whittier (Savage Canyon)		MSW	5	1	1	5	12	2
United Rock (Nu-Way Arrow)	Irwindale	Inert	3	5	5	*3	16	2
Arcadia Reclamation	Arcadia	Inert	3	5	5	*3	16	2
Bradley	Sun Valley	MSW	3	4	1	**3	12	3
Calabasas	Agoura	MSW	2	3	1	5	11	3
Cal-Mat (Vulcan Materials)	Sun Valley	Inert	3	5	5	*3	16	3
Scholl Canyon	Glendale	MSW	5	3	1	5	14	3
Atkinson Brick Company	Los Angeles	Inert	3	5	5	*3	16	3
Strathern	Sun Valley	Inert	3	5	5	*3	16	3
Sunshine Canyon	Sylmar	MSW	1	4	5	1	11	3
Chiquita Canyon	Valencia	MSW	1	4	1	2	8	4
Antelope Valley	Palmdale	MSW	3	2	1	5	11	5
Lancaster	Lancaster	MSW	5	2	1	5	13	5

Methods for scoring

{Life expectancy} {Years}	{Cost $/ton}	{Counts as Disposal}	{Restrictions and/or} {Tons Per Day}
0-5 = 1	Free = 5	Yes = 1	None = 5
6-10 = 2	0.44 – 3 = 4	No = 5	6,000 tpd = 4
11-15 = 3	4 – 9 = 3		3,000– 5,999 tpd = 3
16-20 = 4	10- 26 = 2		1,000- 2,999 tpd = 2
20+ = 5	27 + = 1		0- 999 & Origin = 1

Note: * Where life expectancy for facility is unknown, a rating of 3 was given.
** Facility could request permit to expand landfill capacity.

3.3.6 Recommendations by Sediment Area

<u>Recommendations for Sediment Management Area I</u>

1. Utilize inert landfills which are not required to have a Solid Waste Facility Permit or which will fall under the Enforcement Agency Notification tier. This will avoid higher disposal costs and will not count against the County for the purpose of complying with the State waste reduction mandate. Currently, these include:

   - Arcadia Reclamation in Arcadia
   - United Rock in Irwindale
   - Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley
   - Strathern in Sun Valley
   - Atkinson Brick Company in Los Angeles
   - Chandler’s Landfill in Rolling Hills Estates

2. Continue to use Calabasas Landfill for disposal of sediment mixed with debris or waste only. Transport clean sediment to any of the above disposal sites to avoid higher disposal costs and so that such disposal of clean sediment will not count against the County for the purpose of complying with the State waste reduction mandate.

<u>Recommendations for Sediment Management Area II</u>

1. Utilize the following municipal solid waste landfills, which accept soil at no cost, for placement of clean sediment:

   - Scholl Canyon Landfill in Glendale (waste shed restrictions apply)
   - Puente Hills Landfill in the unincorporated area of Whittier
   - Savage Canyon Landfill in the unincorporated area of Whittier

2. May also utilize inert landfills which are not required to have a Solid Waste Facility Permit or which will fall under Enforcement Agency Notification Tier. This will avoid

higher disposal costs and will not count against the County for the purpose of complying with the State waste reduction mandate. Currently, these include:

- Arcadia Reclamation in Arcadia
- United Rock in Irwindale
- Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley
- Strathern in Sun Valley
- Atkinson Brick Company in Los Angeles

2. For disposal of sediment mixed with debris or waste only, use the following municipal solid waste landfills:

   - Sunshine Canyon Landfill in Sylmar
   - Bradley Landfill in Sun Valley
   - Scholl Canyon Landfill in Glendale (waste shed restrictions apply)
   - Puente Hills Landfill in the unincorporated area of Whittier

<u>Recommendations for Sediment Management Area III</u>

1. Utilize inert landfills which are not required to have a Solid Waste Facility Permit or fall under an Enforcement Agency Notification Tier. This will avoid higher disposal costs and will not count against the County for the purpose of complying with the State waste reduction mandate. Currently, these include:

   - Arcadia Reclamation in Arcadia
   - Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley
   - Strathern in Sun Valley

2. For disposal of sediment mixed with debris or waste only, use the following MSW landfills:

   - Sunshine Canyon Landfill in Sylmar
   - Bradley Landfill in Sun Valley
   - Calabasas Landfill in Agoura

<u>Recommendations for Sediment Management Area IV</u>

1. Utilize inert landfills which are not required to have a Solid Waste Facility Permit or which will fall under an Enforcement Agency Notification Tier. This will avoid higher disposal costs and will not count against the County for the purpose of complying with the State waste reduction mandate. Currently, these include:

   - Cal-Mat Sun Valley (Vulcan Materials) in Sun Valley
   - Strathern in Sun Valley

2. For disposal of sediment mixed with debris or waste, use the following municipal solid waste landfills:

    - Chiquita Canyon in Valencia
    - Sunshine Canyon Landfill in Sylmar

Recommendation for Sediment Management Area V

Utilize Antelope Valley Landfill in Palmdale and the Lancaster Landfill in Lancaster for the placement of clean sediment and for sediment mixed with debris or waste.

Table 3.3-4
Landfills by Sediment Area

Sediment Area I			
Landfill	Issues	Disposal	Disposal Cost
Arcadia Reclamation 12321 Lower Azusa Road Arcadia, CA 91006	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Bobtail $45/load 10 Wheel $55/load Semi $65/load Bottom Dump $75/load
United Rock (Nu-Way Arrow) 1245 East Arrow Highway Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed & Dirt) Flatbed $33.50/load Bobtail $45/load 10 Wheel $55/load Semi $62/load
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90

Table 3.3-4 (Cont.)

Sediment Area I			
Landfill	Issues	Disposal	Disposal Cost
Atkinson Brick Company 13633 South Central Avenue Los Angeles, CA 90059	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed loads) Flatbed $150 Bobtail $175 10 Wheel $240 Semi $340 (Clean Dirt) Per load Flatbed $98 Bobtail $98 10 Wheel $98 Semi $150
Chandler's Landfill 26311 Narbonne Avenue Rolling Hills Estates, CA 90274	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $70/load Bobtail $75/load 10 Wheel $95/load Semi $125/load
Calabasas 5300 Lost Hills Road Agoura, CA 91301	❑ Municipal Solid Waste Landfill ❑ Restricted to the City of Los Angeles and CUA's west of the 405 Freeway and north of Sunset Boulevard. Also open cities of Westlake Village, Agoura Hills, Hidden Hills, and Malibu. ❑ Maximum daily capacity 3,500 tpd; estimated daily average 1,166 tpd ❑ Est. remaining years 32	Yes	Inert $26.35/ton Soil $26.35/ton Mixed $26.35/ton

Table 3.3-4 (Cont.)

Sediment Area II			
Landfill	**Issues**	**Disposal**	**Disposal Cost**
Scholl Canyon 7712 North Figueroa Street Los Angeles, CA 90041	❑ Municipal Solid Waste Landfill ❑ Restricted to: Altadena, Glendale, La Canada-Flintridge, Pasadena, South Pasadena, Sierra Madre, La Crescenta, and adjacent county areas. ❑ No charge for clean soil ❑ Maximum daily capacity 3,400 tpd; estimated daily average 1,194 tpd ❑ Est. remaining years 23	Yes	Clean soil free Mixed $30/ton
Puente Hills 2800 Workman Mill Road Whittier, CA 90601	❑ Municipal Solid Waste Landfill ❑ Site subject to close at 10 a.m. ❑ City of LA use prohibited ❑ Soil accepted 9 a.m.- 3 p.m. ❑ No charge for clean soil ❑ Maximum daily capacity 13,200 tpd; estimated daily average 11,900 tpd ❑ Est. remaining years 9	Yes	Clean soil free Analytical $20/ton Mixed $30/ton
Arcadia Reclamation 12321 Lower Azusa Road Arcadia, CA 91006	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Bobtail $45/load 10 Wheel $55/load Semi $65/load Bottom Dump $75/load
United Rock (Nu-Way Arrow) 1245 East. Arrow Highway Irwindale, CA 91706	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed & Dirt) Flatbed $33.50/load Bobtail $45/load 10 Wheel $55/load Semi $62/load

Table 3.3-4 (Cont.)

Sediment Area II			
Landfill	❑ Issues	Disposal	Disposal Cost
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90
Atkinson Brick Company 13633 South Central Avenue Los Angeles, CA 90059	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	(Mixed loads) Flatbed $150 Bobtail $175 10 Wheel $240 Semi $340 (Clean Dirt) Per load Flatbed $98 Bobtail $98 10 Wheel $98 Semi $150
Sunshine Canyon 14747 San Fernando Road Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ No charge for clean soil ❑ Est. remaining years 1	Yes	Clean soil 10 wheeler $50/load Semi $100/load Mixed $30/ton

Table 3.3-4 (Cont.)

Sediment Management Area II			
Landfill	❑ Issues	Disposal	Disposal Cost
Peck Road Gravel Pit 128 East Live Oak Avenue Monrovia, CA 91606	❑ Inert landfill ❑ Permitted, considered disposal ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Maximum daily capacity 1,210 tpd; estimated daily average 131tpd ❑ Est. remaining years 257	Yes	Bobtail $20/load 10 wheeler $30/load Semi $40/load

Table 3.3-4 (Cont.)

Sediment Area III			
Landfill	Issues	Disposal	Disposal Cost
Arcadia Reclamation 12321 Lower Azusa Road Arcadia, CA 91006	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal ❑ Enforcement action pending regarding payment of Solid Waste Management Fee	Not considered disposal for AB 939	Bobtail $45/load 10 Wheel $55/load Semi $65/load Bottom Dump $75/load
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90
Sunshine Canyon 14747 San Fernando Road Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton
Bradley 9081 Tujunga Avenue Sun Valley, CA 91352	❑ Municipal Solid Waste Landfill ❑ Estimated remaining life of 1.5 years ❑ Maximum daily capacity 10,000 tpd; estimated daily average 1,480 tpd ❑ No charge for clean soil ❑ Est. remaining years 1	Yes	Clean soil 10 wheeler $50/load Semi $100/load Mixed $30/ton

Table 3.3-4 (Cont.)

Sediment Area III			
Landfill	Issues	Disposal	Disposal Cost
Calabasas 5300 Lost Hills Road Agoura, CA 91301	❑ Municipal Solid Waste Landfill ❑ Restricted to the City of Los Angeles and CUA's west of the 405 Freeway and north of Sunset Blvd. Also open cities of Westlake Village, Agoura Hills, Hidden Hills, and Malibu. ❑ Maximum daily capacity 3,500 tpd; estimated daily average 1,166 tpd ❑ Est. remaining years 32	Yes	Inert $26.35/ton Soil $26.35/ton Mixed $26.35/ton

Table 3.3-4 (Cont.)

Sediment Area IV			
Landfill	Issues	Disposal	Disposal Cost
Cal-Mat Sun Valley (Vulcan Materials) 11520 Sheldon Street Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert Landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Dump $60/load Bobtail $80/load 10 Wheel $85/load Semi $90/load
Strathern 8230 Tujunga Avenue Sun Valley, CA 91352	❑ Does not have a Solid Waste Facility Permit ❑ Inert landfill ❑ May be reclassified as inert debris engineered fill operation and therefore would not count as disposal	Not considered disposal for AB 939	Any size truck $90
Chiquita Canyon 29201 Henry Mayo Drive Valencia, CA 91355	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ Limited to 30,000 tons per week. ❑ LUP exp. 11/24/19 ❑ Maximum daily capacity 6,000 tpd; estimated daily average 4,779 tpd ❑ Est. remaining years 8	Yes	Inert $22/ton Clean Soil $55/ton Mixed $22/ton
Sunshine Canyon 14747 San Fernando Road Sylmar, CA 91342	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP restriction 36,000 tons weekly ❑ Maximum daily capacity 6,600 tpd; estimated daily average 5,800 tpd ❑ Est. remaining years 4	All loads are considered waste	Inert $42/ton Soil $42/ton Mixed $42/ton

Table 3.3-4 (Cont.)

Sediment Area V			
Landfill	Issues	Disposal	Disposal Cost
Antelope Valley 1200 West City Ranch Road Palmdale, CA 93551	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ All odorous soil is buried ❑ Maximum daily capacity 1,400 tpd; estimated daily average 847 tpd ❑ Est. remaining years 36	Yes	Clean soil $7.5/ton Analytical $20/ton Mixed $30/ton
Lancaster 600 East Avenue "F" Lancaster, CA 93535	❑ Municipal Solid Waste Landfill ❑ Permitted, considered disposal ❑ LUP expires 8/1/12 ❑ Maximum daily capacity 1,700 tpd; estimated daily average 871 tpd ❑ Est. remaining years 54	Yes	Clean soil free Analytical $20/ton Mixed $30/ton

Note: Landfill sites are listed in the order of preferred use based on previous recommendations for each sediment area.

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Attachment F06-4c

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3.4

Evaluation of Public Works' Sediment Transport Policy for Channels and Storm Drains

January 2006

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN
ACTION STEP 3.4

3.4.1 Introduction

Action Step 3.4 covers an evaluation of Public Works' policy on maximum allowable sediment transport capacity in channels and covered storm drains and provides goals.

Priority Goals

Authorize the study of alternatives to reduce the volumes of sediment needed to be placed in SPSs in the Santa Clara River area. Such study would consist of the following:

1. Preparation of a study to explore the feasibility of placing sediment from debris retention facilities in the Santa Clara River area to locations in the structurally modified reaches of the Santa Clara River and its tributaries that are subject to scour from clarified flows due to the lack of in stream stabilization structures. Potential locations to be investigated are identified in Section 3.2.8. The scope of the study would include cost benefit analyses and identification of regulatory requirements and compliance with them.

2. Evaluation of the sediment transport policy for channels and drains in the Santa Clara River watershed to determine the feasibility and cost benefit of revising drain and channel design standards to allow more sediment transport to the Santa Clara River and its major tributaries, the reaches of which either remain in their natural states or lack in stream stabilization structures.

3.4.2 Current Policy

Public Works' current policy for storm drain and channel construction requires the construction of debris control facilities in drainage areas that have debris production rates greater than 250 cubic yards during a Design Debris Event. In addition, Public Works' standards allow for debris carrying systems provided the cumulative sediment load is 1,000 cubic yards or less and the structure meets minimum requirements for drain size, slope, and concrete thickness. With the upstream debris control facilities in the flood control system, degradation and deterioration of our 500 miles of concrete channel and 700 miles of storm drain inverts is not a predominant, routinely occurring phenomena on a system wide basis. The current policy seems to be conducive to maximizing the allowable service life of our concrete surfaces in our storm drains and channels.

The seeming disadvantage to the existing policy is the high sediment management cost associated with our current system. This includes costs for regulatory agency permit acquisition and reporting, debris basin/inlet sediment removal, sediment placement site maintenance, haul route pavement wear, and coordination with local agencies and cities.

3.4.3 Study Purpose

The main benefit of considering a revision in this policy by allowing more sediment to pass through our concrete channels and drains would be the reduced sediment volume needing to be removed from the debris control facilities and transported to our sediment placement sites or other appropriate means of disposal. This policy revision would concurrently extend the operating life of our sediment placement sites, reduce air pollution associated with truck hauling emissions, reduce pavement wear along our sediment haul routes, and lessen the impact of hauling to local residents.

3.4.4 Reservoir Operations with Minimum Pools

Minimum operating pools are established during storm season at Public Works' reservoirs which cause the majority of the sediment in the reservoir inflows to settle upstream of the outlet works. This operating procedure is beneficial to:

- Protect the valves in the dam's outlet works from being damaged or plugged from outflows with high sediment loads.

- Facilitate debulked flow releases from the dam for groundwater recharge operations at the spreading grounds downstream of the dam during storm events with less than a five-year recurrence interval. During major storms, our dams operate primarily in a flood control mode having larger releases that are typically too turbid for groundwater recharge purposes.

After 1978, the operating plan for Devil's Gate Reservoir was changed eliminating the minimum pool requirement. Since Devil's Gate Dam has no nearby downstream spreading grounds facilities, this operating change did not adversely impact Public Works' water conservation activities.

Unlike the Los Angeles and San Gabriel River watersheds, the Santa Clara River watershed contains very few reservoirs, only Bouquet and Castaic Reservoirs, to capture sediment and clarify flows. These reservoirs are not operated by Public Works, nor are they operated to particularly debulk dam releases for downstream uses.

3.4.5 Methodology

To evaluate this proposal, we compared Devil's Gate Dam, Sawpit Debris Basin, and Sierra Madre Dam (which is operated now as a debris basin) to other similar facilities. These facilities actively release sediment during the conveyance of storm and recession flows through their outlet works. These facilities could be considered as prototype facilities for evaluating the impacts of augmented sediment loads in the storm and recession flows conveyed in our channels and drains.

The reservoirs are covered in the first portion of this analysis. Table 3.4-1 summarizes these findings by calculating the baseline annual debris production (BADP) rate of Devil's Gate Reservoir and various other reservoirs as shown in Figure 3.4-1. The BADP was calculated for each facility by dividing the total accumulated sediment for that facility by its analysis period, in years, and then dividing this by the dam's tributary area in square miles.

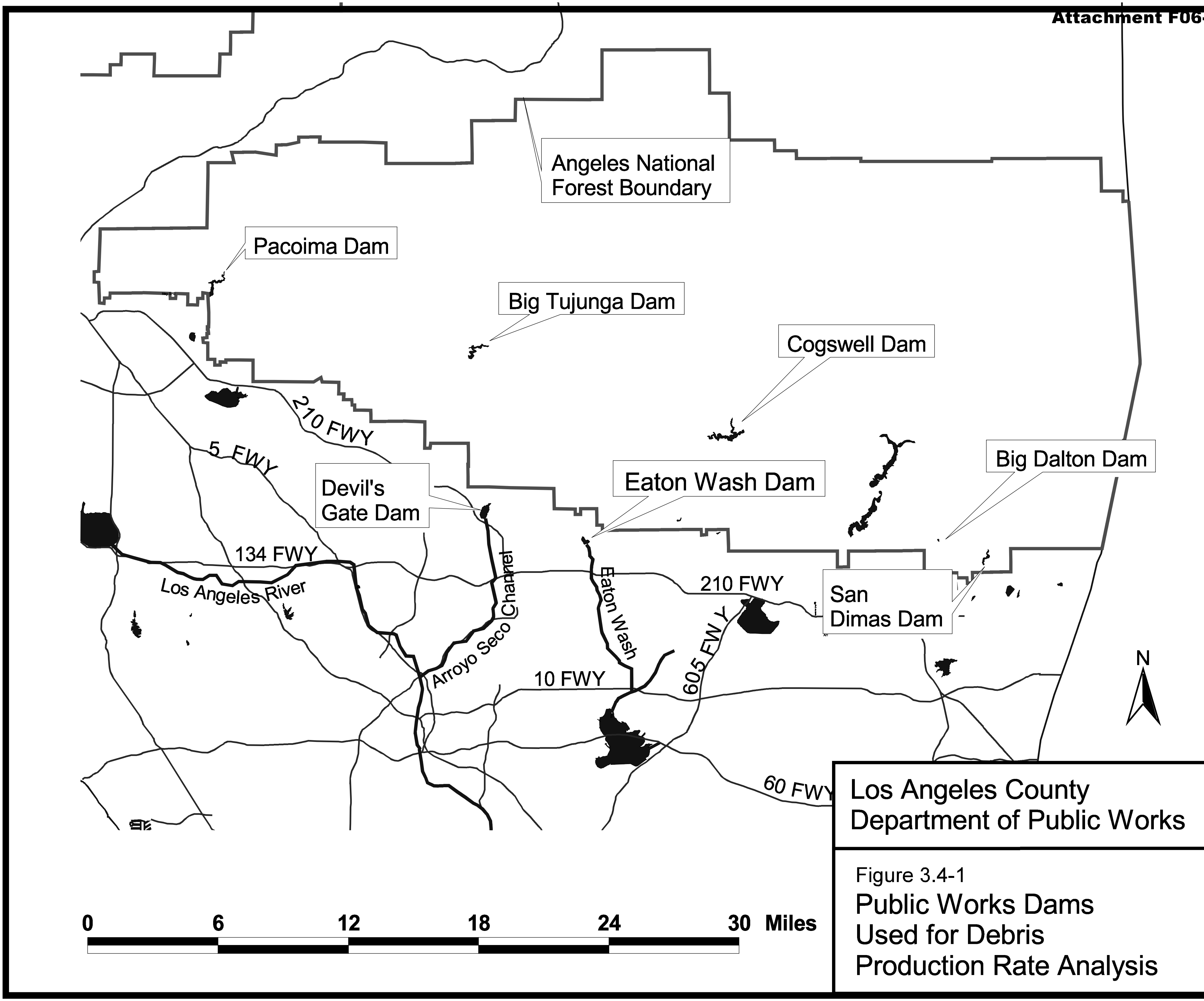
Table 3.4-1
Baseline Annual Debris Production
Per Tributary Area for Various Reservoirs

Analysis Period	Dam	Average Annual Debris Production (cubic yards/year)	Tributary Area (square miles)	Baseline Annual Debris Production (BADP) (cubic yards/year/ square miles)
1919-1978	Devil's Gate	154,000	24.4	6,300
1936-1995	Eaton	59,000	12.4	4,800
1929-2004	Big Dalton	19,000	4.49	4,200
1978-1995	Devil's Gate	92,000	24.4	3,800
1921-2004	San Dimas	52,000	16.2	3,200
1935-1999	Cogswell	123,000	39.2	3,100
1930-1995	Big Tujunga	214,000	82.3	2,600

Following are some comments on the analysis of Table 1 for the dams evaluated:

As previously stated, from 1919 to 1978, Devil's Gate Dam had a minimum pool established during storm season. Accordingly, it recorded the highest BADP (6,400 cubic yards/year/square mile) for this period of all evaluated dams. During the period of 1978 to 1995, Devil's Gate's BADP reduced to 3,800 cy/yr/sq mi. The previously stated operational change of eliminating the minimum pool at Devil's Gate clearly affected the reduction in its BADP. However, analysis of the other reservoirs indicated several of them had much higher BADPs for their operations before 1978 as compared to their operations after 1978. The variation of the number and frequency of major storms that occurred before and after 1978 clearly influences the calculated BADP values.

Field investigations of the Arroyo Seco Channel downstream of Devil's Gate Dam indicate substantial wear in the low flow concrete invert of the channel as shown in Figure 3.4-2. The wear is characterized by the surface of the concrete slab being polished from a depth of 0.05 inches at the edge of the normal low flow region to increasing scour depths in deeper flow zones. The current level of wear does not require repair at this time but is anticipated to require replacement sometime in the next 20 years.



Los Angeles County
Department of Public Works

Figure 3.4-1
Public Works Dams Used for Debris Production Rate Analysis

Figure 3.4-2

Pictures of Invert and Channel Walls of Arroyo Seco Channel downstream of Devil's Gate Dam at Station 312+66.08 in June 2005

Channel Wall

Channel invert adjacent to wall

Edge of low flow invert showing scoured concrete surface

Note: Originally, the entire channel surface was similar to the quality of the channel walls. The photos show an increase in degradation from the channel walls to the bottom of the channel, where the majority of the stream flows with augmented sediment loads travel.

A noticeable wear or scour pattern was not observed in the invert of Eaton Wash Channel downstream of Eaton Wash Dam, which has a high BADP. The good condition of the invert in Eaton Wash Channel appears to be consistent with a relatively low conveyance of sediment loads in the reservoir releases due to the operation of the pool behind the dam during storm season.

The low flow portion of the Arroyo Seco Channel invert was previously reconstructed by construction contracts in 1972 and 1984. In the 1984 contract, 7,000 linear feet of invert was replaced at a total project cost of approximately $442,000.

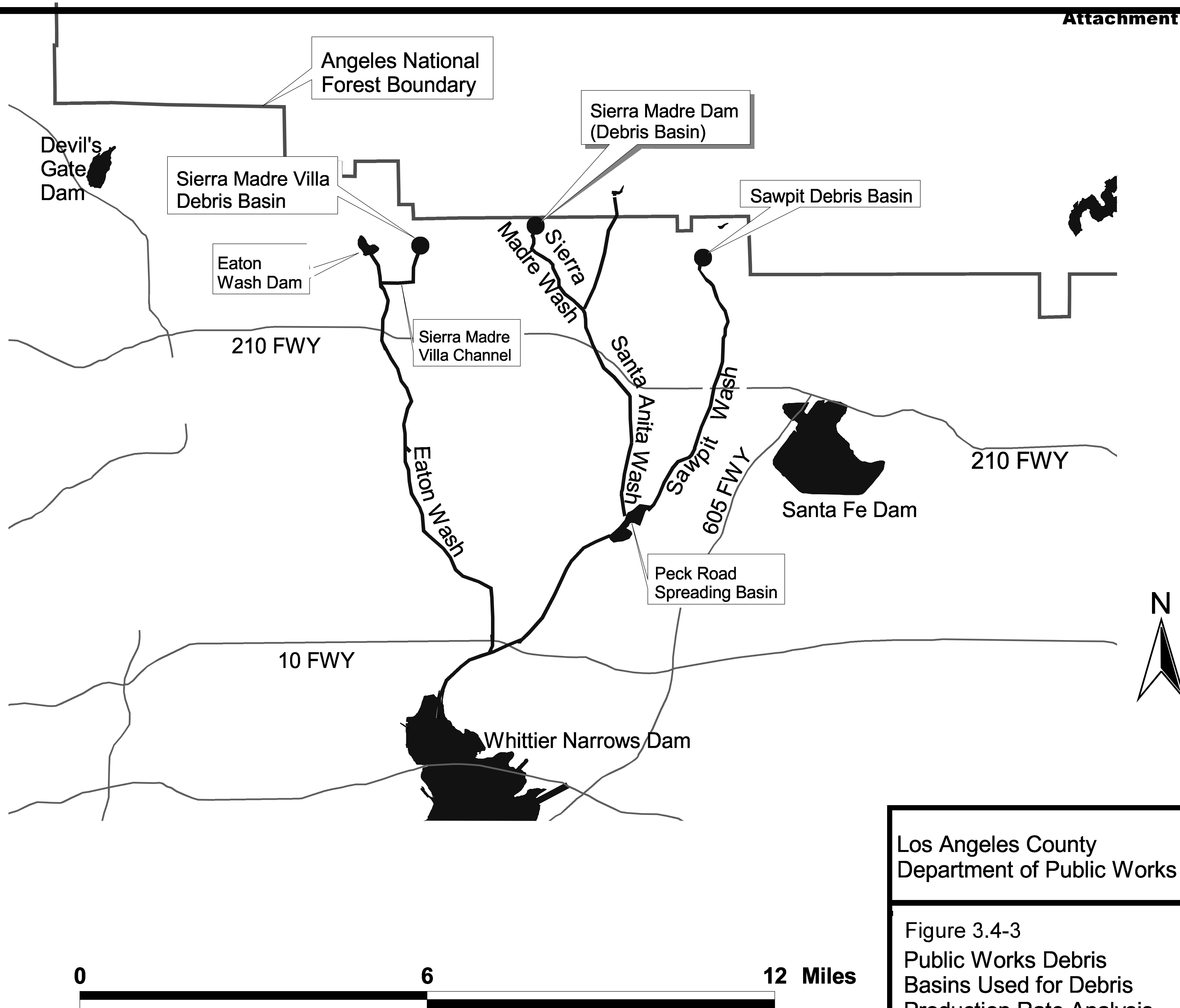
It is noted that the elevated sediment loads in the flows passing through Devil's Gate Dam appear to have caused accelerated wear and scour to the downstream concrete invert of Arroyo Seco Channel. Consequently, the Arroyo Seco Channel low flow invert is anticipated to require additional repair and reconstruction work to be performed at an accelerated rate.

3.4.6 Analysis of Debris Basin Facilities

Sawpit Debris Basin, Sierra Madre Dam, and Sierra Madre Villa Debris Basin were evaluated for impacts associated with varying sediment loads as shown in Table 3.4-2 and in Figure 3.4-3. Sierra Madre Dam has a 5-foot diameter outlet with a trashrack that has one-foot spacings between the vertical bars. The trashrack spacing allows for passage of all sediment except large boulders. Sediment conveyance during storm events is impeded when vegetation accumulates near the outlet. In response to the State Division of Safety of Dam's instructions, the trashrack over the three-foot square opening on Sawpit Debris Basin has been removed. This allows for augmented sediment loads to be passed in the debris basin outflows being routed to Sawpit Wash. Sierra Madre Villa Debris Basin is equipped with a standard outlet tower with four-inch wide slotted openings, which traps most of the sediment behind the debris dam.

Table 3.4-2
Average Annual Debris Production Per Tributary Area
for Sierra Madre, Sierra Madre Villa, and Sawpit Debris Basins

Analysis Period	Dam	Annual Debris Production (cubic yards/year)	Tributary Area (square miles)	Baseline Annual Debris Production (BADP) (cubic yards/year/ square miles)
1928-2003	Sierra Madre Dam	5,700	2.39	2,400
1958-2003	Sierra Madre Villa Debris Basin	18,500	1.46	13,000
1955-2003	Sawpit Debris Basin	14,600	2.84	5,100



Los Angeles County
Department of Public Works

Figure 3.4-3
Public Works Debris Basins Used for Debris Production Rate Analysis

As shown in Table 3.4-2, Sierra Madre Villa Debris Basin has an area adjusted debris production rate that is five and two times more than Sierra Madre Dam and Sawpit Debris Basin, respectively. Thus, the Sierra Madre Villa Debris Basin outlet tower with its slotted openings appears to be effectively retaining sediment. The field reconnaissance work to investigate the concrete invert downstream of Sierra Madre Villa Debris Basin indicated the channel invert exhibited no major wear or scour patterns as shown in the Figure 3.4-4.

The condition of the channel downstream of Sierra Madre Dam revealed extensive wear of the concrete channel invert surface with substantial exposure of the aggregate as shown in Figures 3.4-5, 3.4-6, and 3.4-7. More than two miles of invert will have to be repaired in the future in Sierra Madre Wash from the outlet of the dam to the confluence with Santa Anita Wash. The repair will be costly since most of the channel does not have an adjacent access road.

Figure 3.4-8 shows the pictures from the concrete invert of the low flow channel of Sawpit Wash. The field investigation revealed the sediment-laden outflows passing through the debris basin have scoured out a six-inch wide by three-inch deep parabolic groove in the low flow invert. The overall wear pattern is similar to that seen at Arroyo Seco Channel and downstream of Sierra Madre Dam.

In addition, much of this sediment passing through the debris basin has been deposited in Peck Road Spreading Basin forming a sandbar in the middle of the basin. In the future, this sediment will have to be removed by dredging at a substantial cost.

3.4.7 Current Project Costs for Invert Replacement

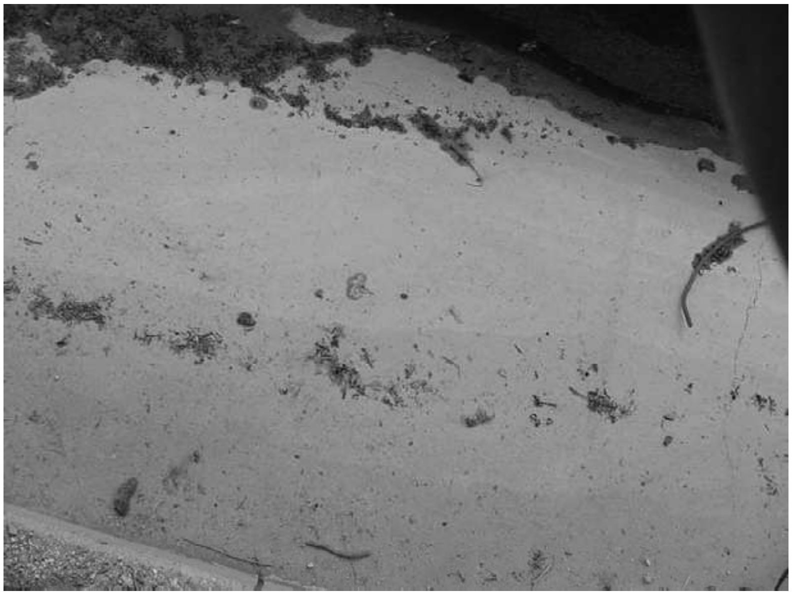
An invert repair was required on Verdugo Wash in 1995, which cost $10.2 million for five miles of channel. Currently, there are plans to repair the invert of Sawpit Wash for approximately five miles of the channel. The cost estimate for this repair is $9.8 million.

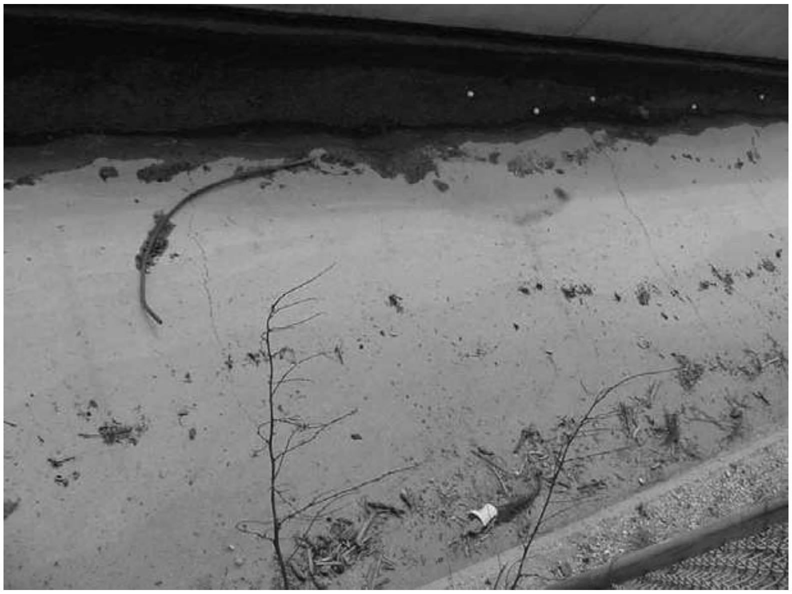
The construction contract to replace the inverts in Bond Issue No. 527 and Private Drain No. 502 in 2003 was awarded at a cost of $609,180. The invert for Rubio Diversion Channel was replaced using a construction contract awarded in 2004 at a cost of $423,200. Both of these contracts were undertaken to repair the facilities' scoured and damaged concrete inverts. Both of these drainage systems have no upstream debris control, resulting in high sediment loads in the storm and base flows.

The structurally modified reaches of the Santa Clara River and most of its major tributaries have soft bottoms. Several other channels and drains in this watershed are designed to carry sediment-laden flows. As a result, sediment-laden storm flows in this watershed would not result in the need for invert repair projects in the near future.

Figure 3.4-4

Pictures of concrete invert of Sierra Madre Villa Channel downstream of the Sierra Madre Villa Debris Basin in June 2005 near Station 73+56





Note: These pictures show the invert surface where the channel low flows are conveyed. The channel surface indicates minimal wear and scour consistent with other concrete channels that have effective upstream sediment control. It is noted that the outlet tower in Sierra Madre Villa Debris Basin reduces the sediment loads stream flows conveyed to the downstream channel.

The channel is in close proximity to Sierra Madre Wash, which is downstream of Sierra Madre Dam (Debris Basin).

Figure 3.4-5

Sierra Madre Wash invert downstream of Sierra Madre Dam (Debris Basin) near Station 20+00.

Significant damage has been caused on the channel floor due to the conveyance of high sediment loads in the storm and recession flows being conveyed through the debris basin outlet. The concrete on the channel invert has numerous potholes and extensive and pervasive wear.

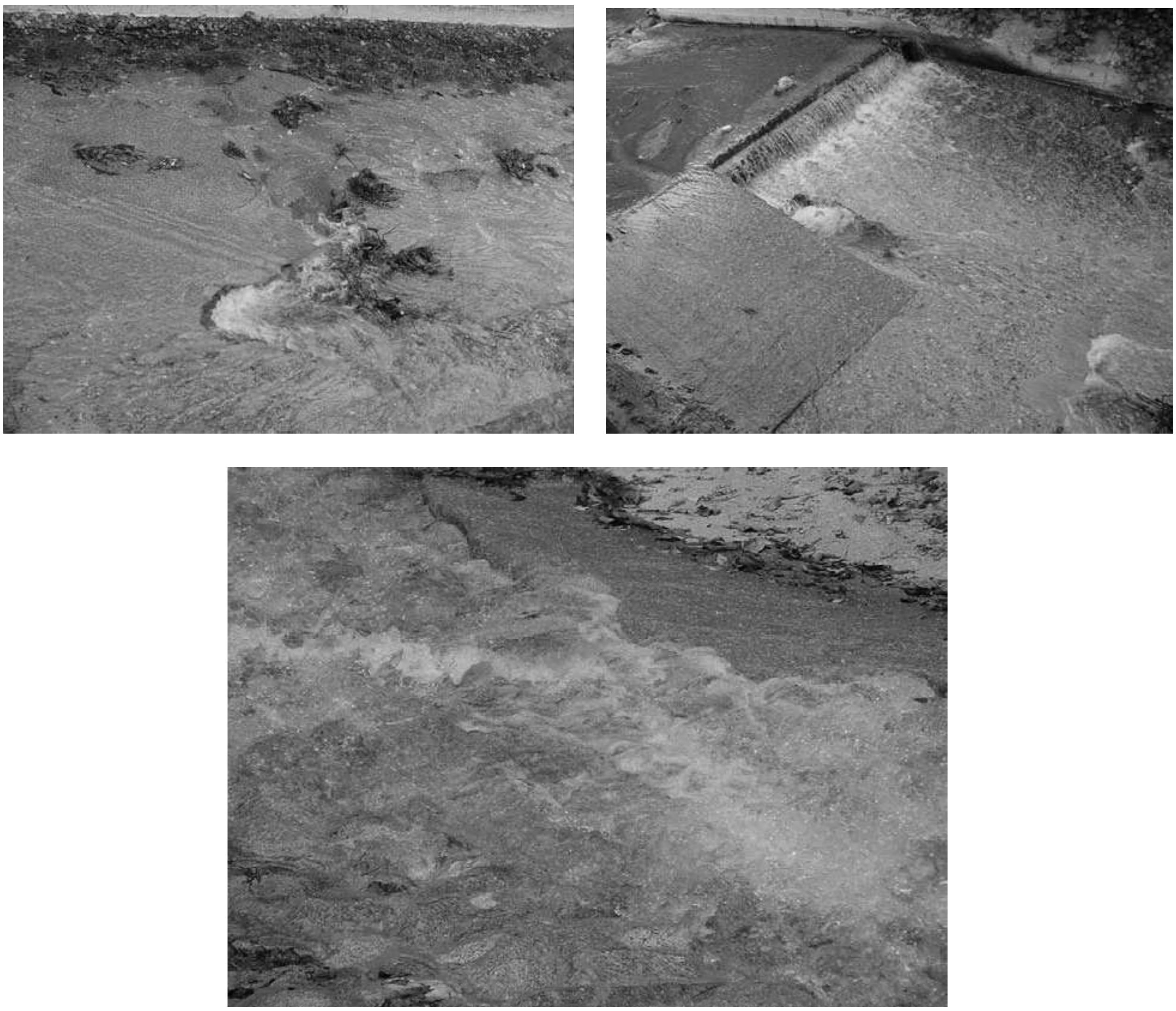
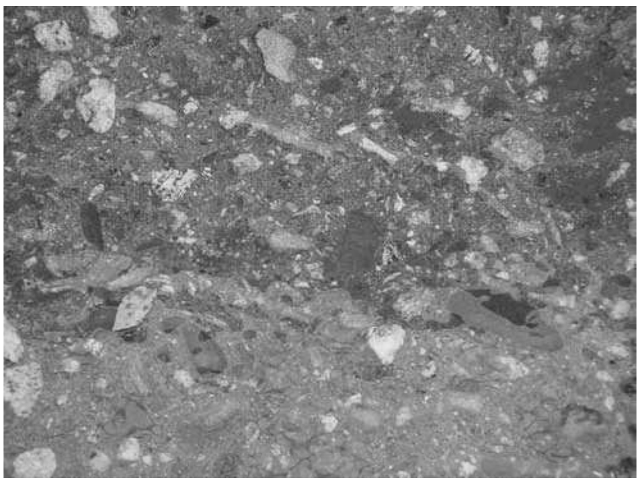


Figure 3.4-6

Invert of Sierra Madre Wash about 300 feet North of Santa Anita Wash at Station 2+49.2 on June 2005.

There is a large amount of aggregate showing along the bottom of this channel that was worn away by the sediment laden flows conveyed through Sierra Madre Dam (Debris Basin). The original finished surface of the channel was similar to the smooth concrete that can be seen on the channel wall in the picture to the right.



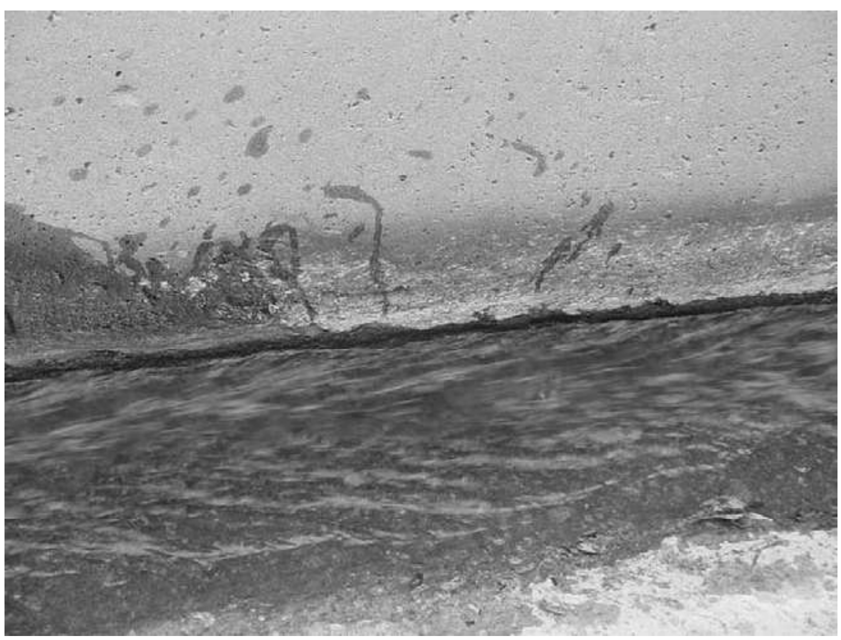


Figure 3.4-7

Sierra Madre Dam (Debris Basin) currently passes sediment during normal operation. The first two photos display the debris that has collected in front of the trashrack at the outlet of the debris basin.


Debris upstream of trashrack


Debris upstream of trashrack


Upstream view of 5-foot diameter dam outlet

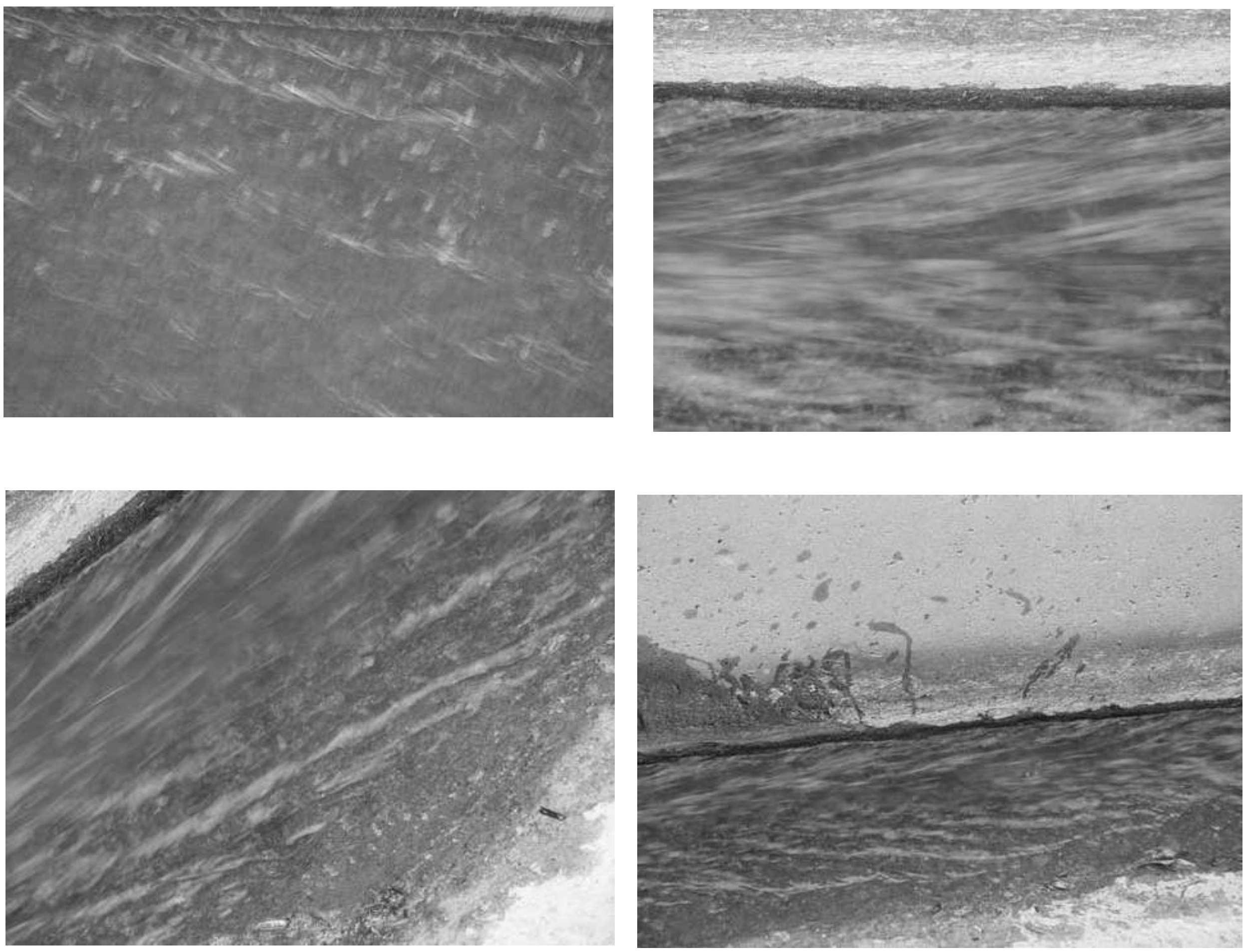

Upstream sediment and aggregate


Upstream boulders, aggregate, and sediment

Figure 3.4- 8

Sawpit Wash invert adjacent to channel wall 2,000 feet downstream of Sawpit Debris Basin in June 2005

These photos show the exposed aggregate on the concrete channel invert, which was worn away by stream flows with high sediment loads. In addition, it was noted that along the floor, next to the channel wall, there is a parabolic-shaped scour grove in the invert, which is six inches wide and three inches deep.



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3.4.8 Elevated Sediment Load Impacts on Groundwater Recharge Operations

Increased sediment in our channel storm flows also causes problems with the operations of our spreading grounds with the potential to significantly reduce or suspend our water conservation operations. In order to maintain optimized percolation rates, sediment must be removed regularly from the spreading grounds. To minimize these cleanouts, channel flows containing sediment in excess of 500 ppm are not permitted into the grounds for recharge. With this current practice, channel flows exceeding this turbidity threshold must bypass the spreading grounds, thus wasting otherwise valuable water.

During the storm on December 25, 2003, Irwindale Spreading Grounds had to be closed due to high turbidity. As a result, over 170 acre-feet of water were wasted to the ocean. In addition, if flows of high turbidity were permitted to enter the spreading grounds, more frequent cleanouts involving larger quantities of sediment would be needed.

The September 2002 Williams Fire burned over 58 square miles of chaparral and forest area above a 17-mile southerly front along the Cities of Azusa, Glendora, San Dimas, La Verne, and Claremont. During storm events, runoff from this burned watershed was excessively turbid and could not be used for groundwater recharge purposes in our spreading grounds in the San Gabriel Valley. Our 2002-03 water year volume of water conserved was 45 percent of normal despite it being a normal rainfall year.

Significant groundwater recharge also occurs within the soft bottom reaches of the San Gabriel River. In the aftermath of Public Works' 1998 sluicing of Morris Reservoir, the local water entities prevailed upon Public Works to stop sluicing operations because they found the resultant temporary reduction in instream percolation to be an unacceptable impact on their groundwater recharge goals.

Minimal groundwater recharge occurs in the soft bottom reaches of the Los Angeles River.

There are no groundwater recharge facilities in the Santa Clara River watershed, so sediment-laden channel flows are not anticipated to have a significant adverse effect on current percolation levels in the river and its major tributaries.

3.4.9 Impacts on Instream Stabilization

Below the foothills, the Los Angeles and San Gabriel Rivers and their major tributaries are either fully lined with concrete, or their soft bottom reaches contain numerous stabilization structures. As a result, flows clarified by reservoirs and debris control facilities do not have an adverse impact on the structural integrity of these channels.

Many reaches in the Santa Clara River and its major tributaries, however, are either structurally unaltered, or contain few, if any, instream stabilization structures. As a result, significant scouring or unstabilization have been observed at several locations adjacent to developed areas. Examples of such locations are listed in Table 3.4-3. The scouring may be the result of the debulking of storm flows by upstream debris control facilities, which may also cause scouring in natural watercourses downstream of debris control facilities.

Table 3.4-3
Example Locations of Scour in Developed Areas of the Santa Clara River Watershed

Watercourse	Location
Santa Clara River	Bouquet Canyon Road Bridge Area
Santa Clara River	Sand Canyon Road Bridge Area
Santa Clara River	Various Locations Downstream of Lang Station Road
Santa Clara River – South Fork	Between Magic Mountain and McBean Parkways
Pico Canyon	Downstream of Stevenson Ranch Debris Basin

Therefore, the allowance of more sediment laden flows in the Los Angeles and San Gabriel Rivers would not improve instream stabilization therein. However, the allowance of more sediment-laden flows in the Santa Clara River watershed may benefit natural and soft bottom watercourses therein.

3.4.10 Other Considerations

There are other parameters that would also need to be investigated prior to a systematic change in our flood control facilities to allow augmented sediment loads. This would include impacts at the outlets of the San Gabriel River and the Los Angeles River and the nearby coastal facilities, including marina, jetty, and breakwater facilities built by the Corps of Engineers. It is noted that the Corps conducts regular dredging operations at these facilities. However, for beach sand replenishment purposes, the Corps identified that our existing debris control infrastructure interrupts the natural replenishment of coastal sediment transported by our concrete lined channels and rivers.

Since development and attendant deulking of storm flows along the Santa Clara River are much more recent than along the Los Angeles and San Gabriel Rivers, significant adverse impacts to facilities at the outlet of the river are not anticipated, since they were more likely established with natural sediment loads in mind. However, impacts at the outlet to the Santa Clara River in Ventura County from augmented sediment flows need to be carefully considered.

3.4.11 Conclusions

As a result of the adverse impacts in the Los Angeles and San Gabriel River watersheds caused by sediment flows, it is recommended Public Works continue its operations in limiting, as much as possible, the amount of sediment allowed into the drainage systems downstream where the system is a concrete lined channel or drain.

Due to the scouring impacts reduced sediment loads in stream flows and, indeed, the possible adverse impacts of clarifying stream flows in the Santa Clara River watershed, it is recommended Public Works explore the feasibility of revising its design standards for facilities therein to allow more sediment to enter this system.

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COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 3.5

Identify Future Opportunities and Projects Requiring Large Quantities of Sediment

January 2006

Sediment Management Strategic Plan – Strategy 3 Report
Action Step 3.5: Identification of Future Opportunities and Projects Requiring Large Quantities of Sediment

3.5.1 Introduction

This section of Strategy 3 - the search for potential "end-users" of the sediment produced at Public Works' facilities. Federal, State. local, and private representatives were contacted regarding any future need for large amounts of material. It was discovered that a broad range of projects and needs has the ability to divert anywhere from a couple thousand yards to one million yards of material from Public Works' SPSs.

<u>Priority Goal</u>

The Sediment Manager, as discussed in the Strategy 3.2 Report, should coordinate with the entities identified in the following Table 3.5.1 and any future sediment "end-users" to divert as much material as possible from Public Works' SPSs.

3.5.2 Seeking Alternatives to Public Works' SPSs

It is inevitable that erosion will continue to occur throughout the County of Los Angeles, and Public Works' debris retaining facilities will receive a fair share of that debris. It is imperative that all viable alternatives are investigated to reduce the strain on Public Works existing SPSs. The existing network of SPSs is generally located in areas adjacent to these debris retaining facilities and offer excellent emergency sediment placement capacity. If the SPSs continue to be utilized without any regards to their shrinking capacity, the end result will be extremely costly and politically unfavorable future facility cleanout material will be hauled to distant SPSs.

In order to avoid that potential situation, the staff of WMD contacted numerous organizations, both public and private, searching for entities who are in need or will need large amounts of sediment for future projects and/or beneficial reuse. This effort resulted in identifying over 20 entities with needed amounts of sediment ranging from 2,000 cubic yards to around 1,000,000 cubic yards. The results of this research have been compiled in Table 3.5-1, which details the organization, its respective need, contact information, and general comments. This table should be considered a living document and will be modified as warranted. The Sediment Manager, as discussed in the Strategy 3.2 Report, would utilize this table to locate sediment placement alternatives to Public Works SPSs.

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Table 3.5-1
Potential End-Users of Public Works' Sediment

Entities	Response	Project Description	Contact Person	Comment
Vulcan Materials Company	Need 500,000 cys in the next three years	Grading and road building in Sun Valley Quarry	Dan Brown (818) 922-8840	
City of Santa Clarita	Need 20,000 cys	Bike trail repairs	mfernandez@santa-clarita.com (661) 255-4332	
Land Development	Does not have projects	Use in Edapts	Toan Duong (626) 458-4945	Will try to incorporate in eDAPTS to include in their plan checks. Possible SPS in Santa Clarita to include staging/stockpile
City of South Gate	Did not respond			
City of Pasadena	Has two projects	Two multi-purpose sports fields/ Martin Pastucha	Martin Pastucha mpastucha@cityofpasadena.net	Might help to include SPS information in their plan check
City of Burbank	Has one project	Use in their landfill	Mr. Dan Wall Dwall@ci.burbank.ca.us	Might help to include SPS information in their plan checks
City of Alhambra	Did not respond			
City of Glendale	Does not have projects		Mr. Jake Amar ramar@ci.glendale.ca.us	Might help to include SPS information in their plan checks
City of Los Angeles	Has one project	Tujunga Ave Washout	Chris Johnson (213) 847-4010	Might help to include SPS information in their plan checks
Watershed Management	Has one project	Sun Valley Project - Sheldon Pit to be graded to construct an infiltration basin. Strathern Pit has 1.0 mcy capacity.	Vik Bapna (626) 458-4363	Might help to include SPS information in their plan checks
City of Claremont	Does not have projects		Craig Bradshaww cbradshaw@ci.claremont.ca.us	
County Sanitation	Material must meet requirements for use as daily cover	Puente Hills Landfill	Mr. John Gulledge jgulledge@lacsd.org (562)699-7411 ext. 6008	Permit requirements must be met.

Table 3.5-1

Potential End-Users of Public Works' Sediment

Entities	Response	Project Description	Contact Person	Comment
City of Arcadia	One project	New Santa Anita Reservoir Project 3,000 to 4,000 cys.	Mr. Herman (626) 256-6654	
Programs Development Division - Use of Railroads	The railroads companies might be amenable	Transfer stations and end point users would have to be established	Mr. Greg Jaquez (626) 458-3935	
City of Irwindale		Olive Pit, North portion of Manning Pit, and Kinkaid Pit		Can be used as SPS and SG to recharge groundwater
Santa Clara River		Sediment placement near Sand Canyon Road and Old Road		Permits required
Beaches & Harbors		Various beaches such as Malibu at the Chart House	Malibu City Engineer (310) 456-2489	Permits required
Developers				Designate part of their developments as SPSs
LA County Sanitation District's Palos Verdes Outfall DDT site	On-going Super Fund Project by the EPA	Capping of DDT site	Mr. Wang of RWQCB (213) 576-6637 www.epa.gov/region9/features/pvshelf	An EPA Super Fund Site. Many studies including dumping of sediment have been made. No viable solution has been found.
Caltrans, Hydraulics Division	They do not accept our sediment since the sediment they use has to meet certain quality		Mr. Ken Simon Caltrans Public Affairs (213) 897-1876	The sediment that they use has to be tested and filtered of particles not permitted by various regulatory agencies.
West Covina BKK Landfill Closure		Soil will be layered 7.5 feet deep and will be converted to a golf course, commercial center and sports complex. They will use their own sediment to cap the landfill.	City Manager (626) 939-8400	
PSD Enterprises	Previous Permittee for SPS sediment removal work	Has used our SPS sediment for topsoil	Pete Demetrulias (661) 254-1045 24981 San Fernando Road, Newhall CA 91321	

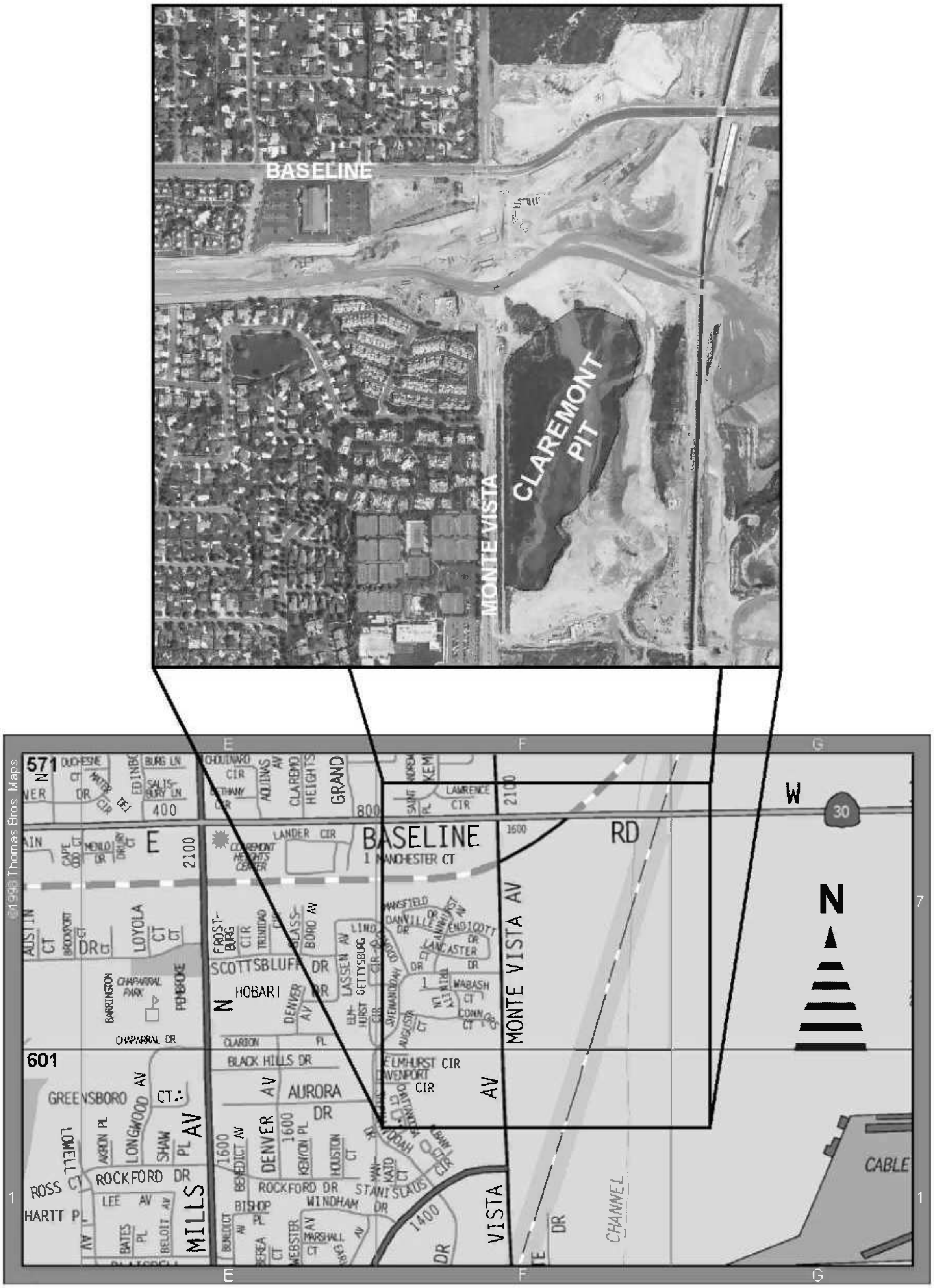
Table 3.5-1
Potential End-Users of Public Works' Sediment

Entities	Response	Project Description	Contact Person	Comment
24981 San Fernando Road Newhall, California 91323		This firm processes and sells topsoil. In July 2005, the firm obtained permit No PCFA200501141 to process sediment from May SPS but due to various problems they could not process the sediment at their site for resale.		
Hansen Aggregates Livingston Graham Landfill			Bruce Dube - Plant Manager (626) 856-6716	
13550 Live Oak Lane Irwindale, California 91706		This inert landfill received over 65,000 cubic yards of sediment from Clark Construction who performed the2005 Little Dalton Debris Basin sediment removal project.	John Dike Landfill Inspector (562) 244-4318	
Holliday Rock		Their Claremont Pit could possible recive sediment from east side facilities	David Resweber (909) 982-1553	
Mike Bubalo Construction		Developer/Material Processor, will accept material on a continuous basis call to verify	Dave Sorem (626) 960-7788	
Whittier Fertilizer Company		No need for material	Richard (562) 699-3461	
A.E. Schmidt		Material Processor not in need of material. Trys to maintain consistency in products which is not available with sediment	Rus (661) 251-2901 (800) 479-2901	

APPENDIX A

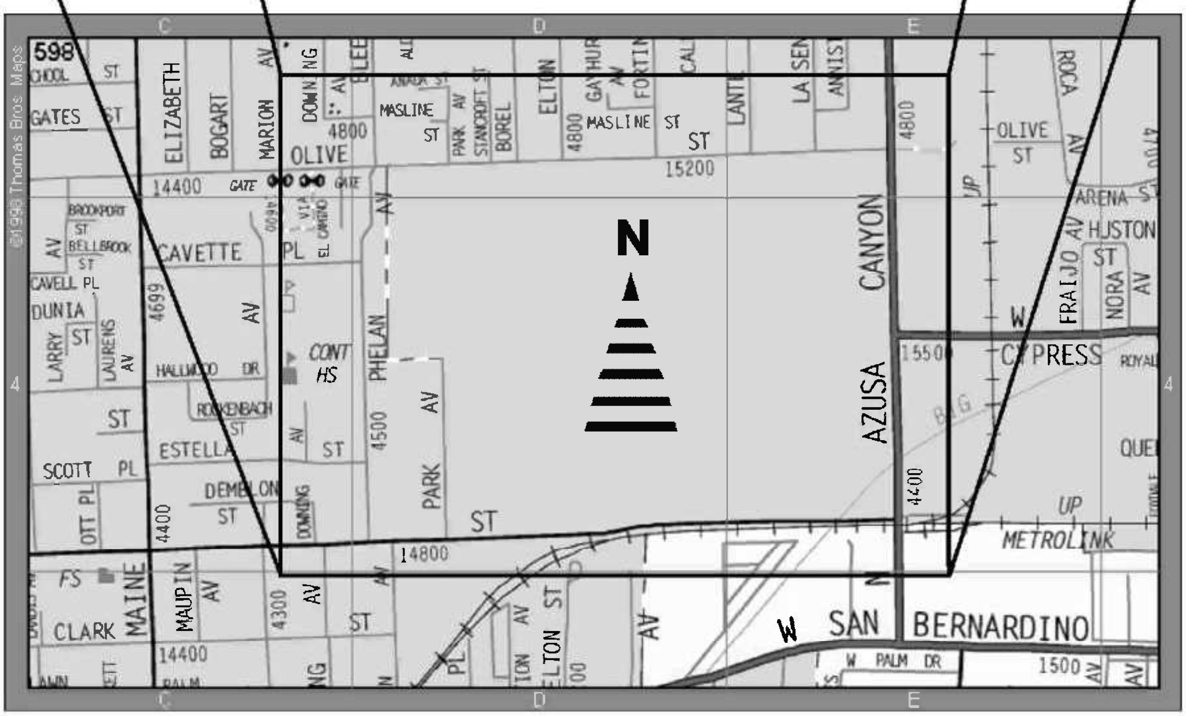
Maps and Material Requirements for Placement at Quarries/Pits

Attachment F06-4c



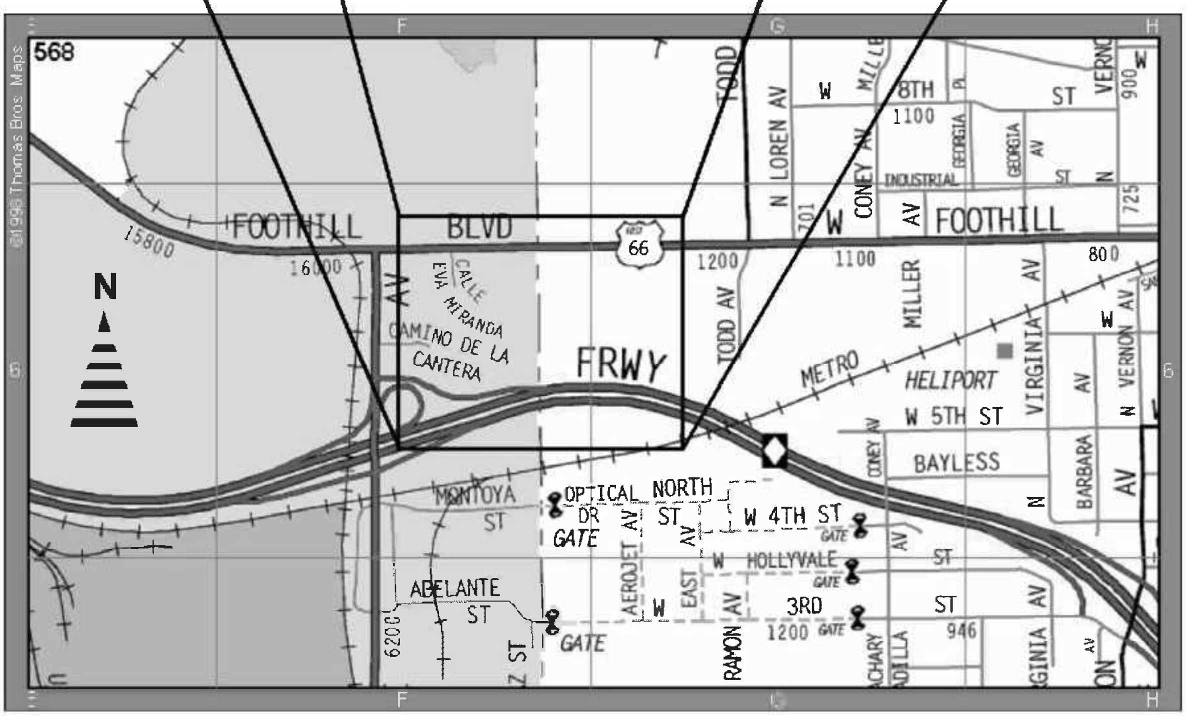
Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 571 F7	Date: 8-17-2005	Appendix C - Figure 1 Holliday's Claremont Pit

Attachment F06-4c

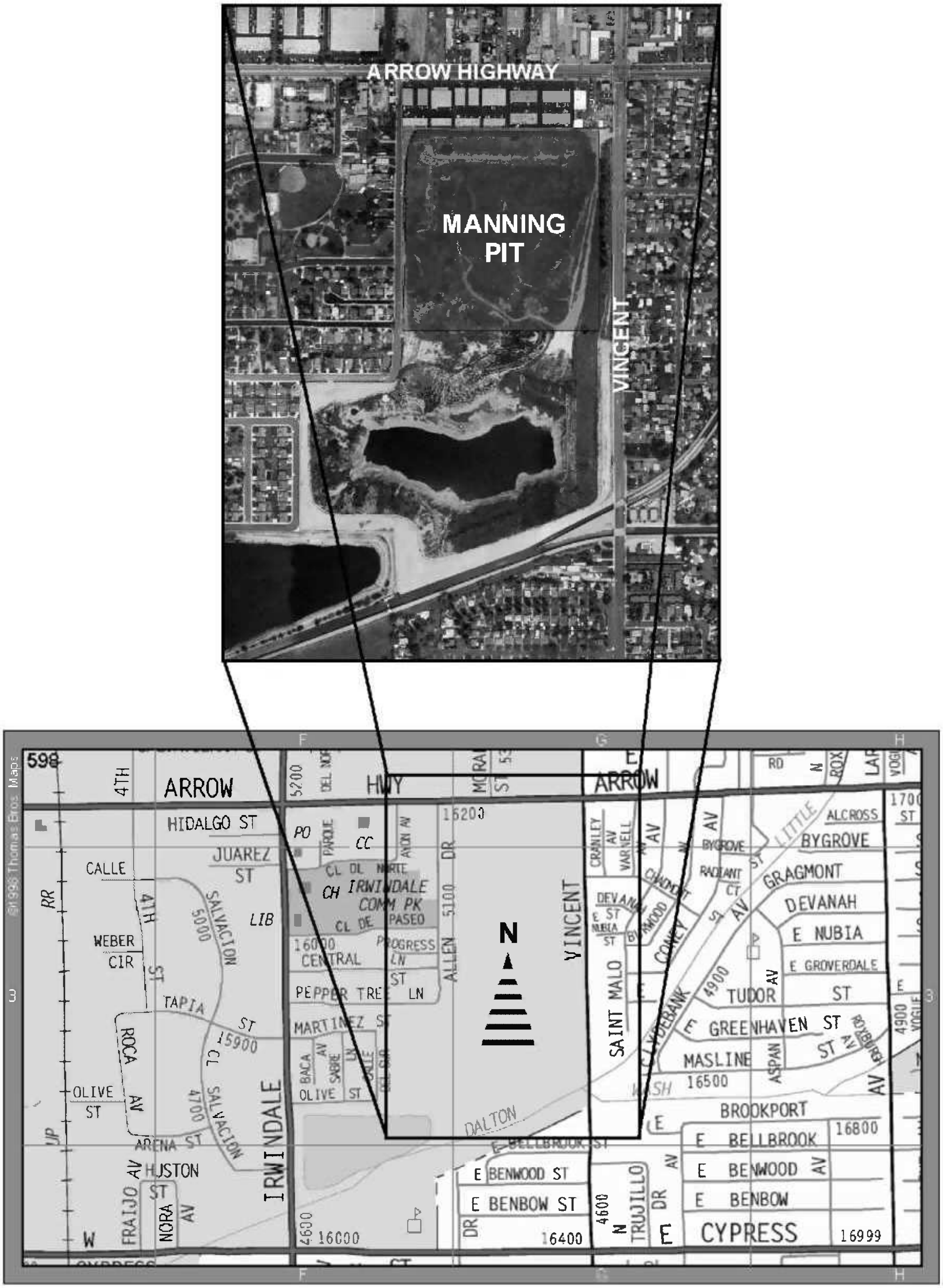


Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 598 D4	Date: 8-17-2005	Appendix C - Figure 2 Irwindale's Olive Pit

Attachment F06-4c

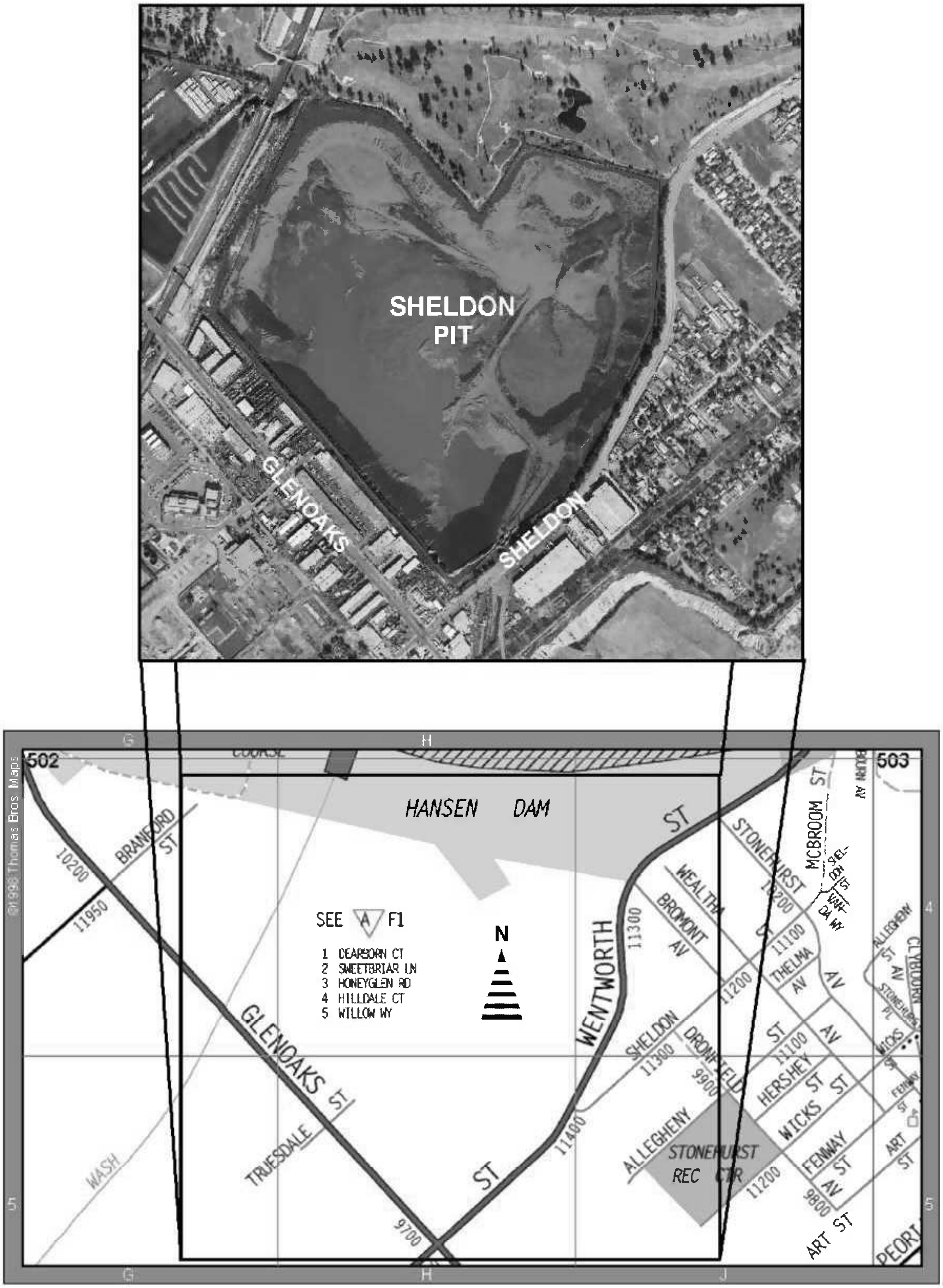


Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 568 F6	Date: 8-18-2005	Appendix C - Figure 3 Irwindale's Kincaid Pit

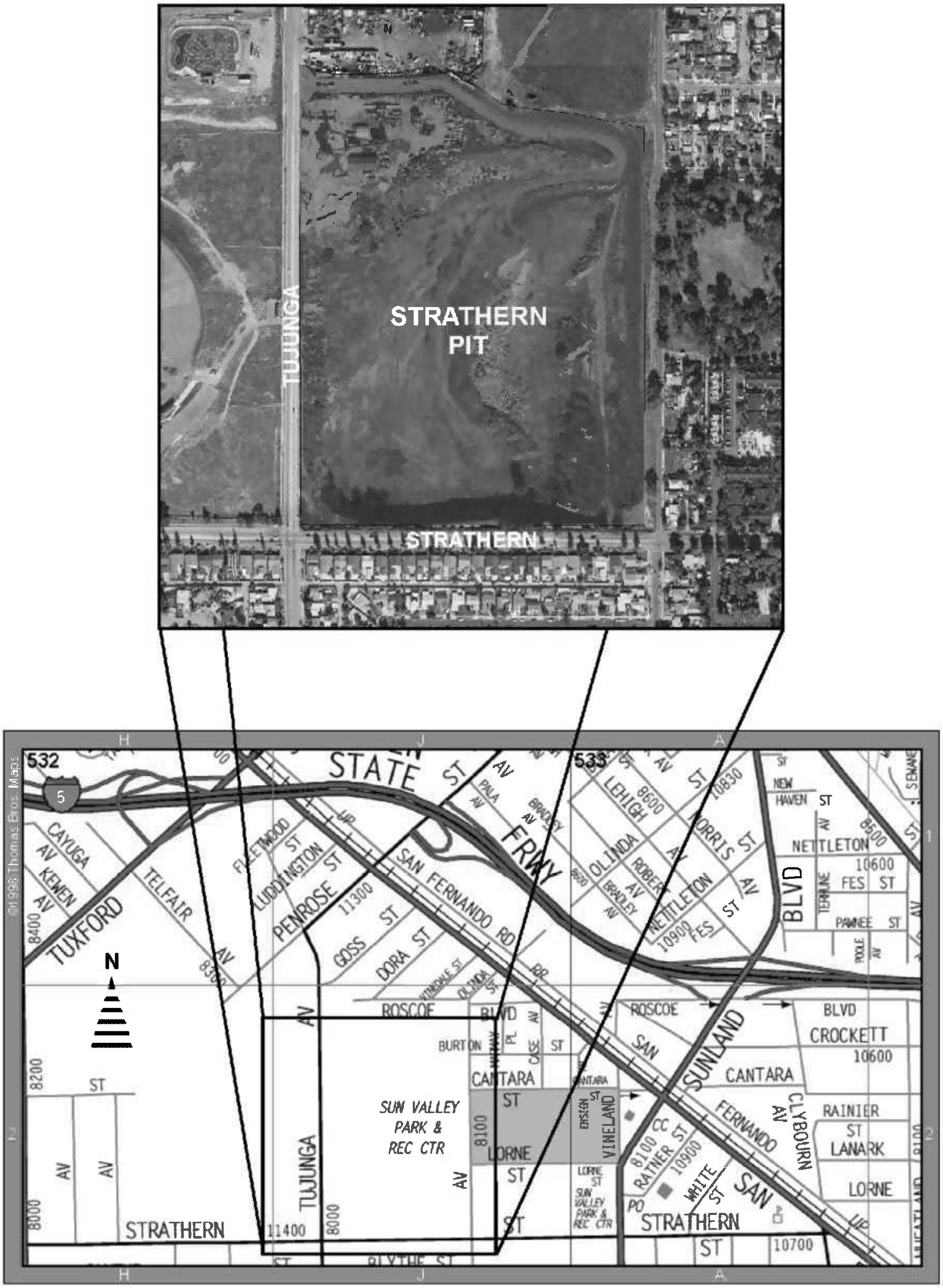


Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 598 G3	Date: 8-18-2005	Appendix C - Figure 4 Irwindale's Manning Pit

Attachment F06-4c



Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 502 H4	Date: 8-18-2005	Appendix C - Figure 5 Vulcan's Sheldon Pit



Scale: None	Prepared By: R. Romo	LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS
Thomas Guide: 532 J2	Date: 8-18-2005	Appendix C - Figure 6 Strathern Pit

APPENDIX A

Material Requirements for Placement at Quarries/Pits

Claremont Pit, operated by Holliday Rock as a reclamation pit, the material must meet the following qualifications:

Non-expansive clean fill
Sand Equivalent (SE): >30
< 3% organics
< 8" diameter
free from contamination/discoloration

Olive Pit, owned by the City of Irwindale, is currently not permitted to accept material.

Kincaid Pit, owned by the City of Irwindale, is currently not permitted to accept material.

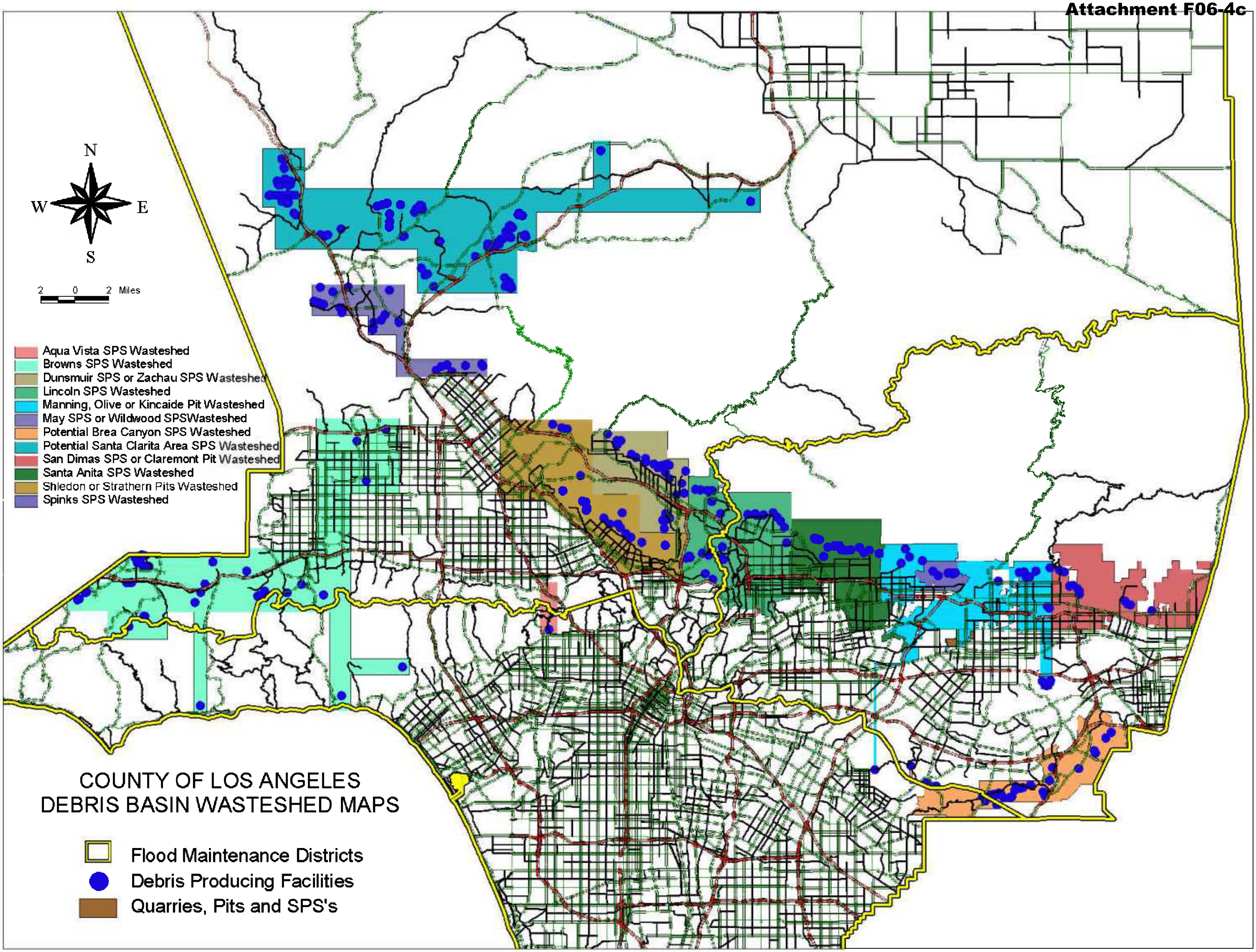
Manning Pit North, owned by the City of Irwindale, is being evaluated by the City to determine what to do with the un-compacted material already placed. Ultimate plans call for low income residential units on the land, when brought to grade. Awaiting City plans and course of action for ultimate fill.

Sheldon Pit, owned by Vulcan Materials, utilized primarily as a water filtration/settling basin, the City has required the company to reinforce the slopes of the pits by increasing the slope from near vertical to 2:1. Vulcan requires numerous forms for vendors to work on-site and bring in fill material see documents attached. Actual material requirements are known by Vulcan who will conduct field tests to determine acceptability.

Strathern Pit, operated by Los Angeles Byproducts, is a inert landfill accepting material from the general public for $90 per truck. Inert fill material is sand, rock, broken concrete, road base, etc.

APPENDIX B

Wasteshed Map – for Existing and Potential SPS's


N
W
E
S
2 0 2 Miles
Aqua Vista SPS Wasteshed
Browns SPS Wasteshed
Dunsmuir SPS or Zachau SPS Wasteshed
Lincoln SPS Wasteshed
Manning, Olive or Kincaide Pit Wasteshed
May SPS or Wildwood SPSWasteshed
Potential Brea Canyon SPS Wasteshed
Potential Santa Clarita Area SPS Wasteshed
San Dimas SPS or Claremont Pit Wasteshed
Santa Anita SPS Wasteshed
Shledon or Strathern Pits Wasteshed
Spinks SPS Wasteshed
COUNTY OF LOS ANGELES
DEBRIS BASIN WASTESHED MAPS
Flood Maintenance Districts
Debris Producing Facilities
Quarries, Pits and SPS's

APPENDIX C

Cost Analysis for Brea Canyon SPS

The following spreadsheets detail the differences in cost for removing approximately 2000 yards from Fieldbrook Debris Basin. The only difference being the SPS location. The cost savings is roughly 50%, which is primarily due to the reduced number of 10-yard trucks required to conduct the hauling operation. Given that the Diamond Bar/Hacienda Heights Area has a projected sediment accumulation of 106,000 cubic yards over the next twenty years, or roughly 53 2,000 cubic yard clean-outs, we can assume a net savings of approximately $900,000 in today's dollars.

DEBRIS BASIN CLEANOUT COST COMPUTATION

Using 10-wheeler Trucks (8 c. y. load)

DEBRIS BASIN Fieldbrook — CALCULATED BY LPS — DATE 4/14/03
CHECKED BY ______ — DATE ______

SPS SITE Manning

BASIN MAXIMUM CAPACITY in Cu. Yds.	11,000	c.y.	
VOLUME REMOVED PER CLEANOUT =	**2,000**	c.y.	(A)
HAUL DISTANCE (round trip) in miles	**4.66**	miles	(B)
AVERAGE SPEED OF TRUCKS in miles per hour =	**20**	mph	(C)
TRAVEL TIME (roundtrip) = [(B)/(C)]*60min/hr =	**14.0**	min.	(D)
LOAD TIME (varies from 1 - 3 minutes) =	**1.5**	min.	(E)
DUMP TIME (varies from 1 - 2 minutes) =	**1.5**	min.	(F)
TOTAL CYCLE TIME = (D) + (E) + (F) =	**17.0**	min.	(G)

NUMBER OF LOADS/DAY:

$\frac{10 \text{ hrs/day} \times 50 \text{ min/hr}}{(E)}$ = **333.33** (H)

NUMBER OF LOADS/TRUCK/DAY:

$\frac{10 \text{ hrs/day} \times 50 \text{ min/hr}}{(G)}$ = **29**

NUMBER OF TRUCKS REQUIRED:

$\frac{\text{TOTAL CYCLE TIME}}{(E)}$ = **11** trucks (I)

NUMBER OF CUBIC YARDS MOVED/DAY:

TYPE OF EQUIPMENT	APPROXIMATE CAPACITY (c.y./load)
10-wheeler truck - 3 axle	8
18-wheeler dump truck - 5 axle	16
Scraper, model 631D	25

Use 10-wheeler truck, CAPACITY =	**8**	c.y./load	(J)
(H) x (J) =	**2667**	c.y./day	(K)
CLEANOUT DURATION (working days) = (A)/(K) =	**1**	days	(L)

HAUL COST:

TYPE OF EQUIPMENT (operated & maintained)	monday - friday - saturday	sunday & holiday
10-wheeler truck - 3 axle	varies $53/hr to $60/hr.	
18-wheeler dump truck - 5 axle	varies $63/hr to $66/hr.	
Scraper, model 631D	$160/hr	

EQUIPMENT HOURLY RATE (10-wheeler truck) =	**$56.00**	(M)
(I) x (M) x (10hr/day) x (L) =	**$4,754.40**	

LOADING COST:

3 - D8 DOZERS @ $137/hr x (10hr/day) = $4110/day x (L) =	**$3,082.50**
1 - 977 LOADER @ $120/hr x (10hr/day) = $1200/day x (L) =	**$900.00**
3 - LABORERS @ $30.20/hr x (10hr/day) = $906/day x (L) =	**$679.50**
MOBILIZATION/DEMOBILIZATION (lump sum), assume $1,500 =	**$1,500.00**

SPREADING COST:

3 - D8 DOZER @ $137/hr x (10hr/day) = $4110/day x (L) =	**$3,082.50**
1 - 4000 gal. WATER TRUCK @ $60/hr x (10hr/day) = $600/day x (L) =	**$450.00**
3 - LABORERS @ $30.20/hr x (10hr/day) = $906/day x (L) =	**$679.50**
MOBILIZATION/DEMOBILIZATION (lump sum), assume $1,500 =	**$1,500.00**

OTHER COST:

1 - FOREMAN @ $61.25/hr x (10hr/day) = $612.50/day x (L) =	**$459.38**
1 - ASSISTANT FOREMAN @ $33.62/hr x (10hr/day) = $336.2/day x (L) =	**$252.15**
1 - FOREMAN'S PICKUP TRUCK @ $0.75/mile x (125miles/day) = $93.75/day x (L) =	**$70.31**

TOTAL COST = $\boxed{\$17,410.24}$ (N)

COST PER CUBIC YARD = (N)/(A) = $\boxed{\$8.71}$

Attachment F06-4c

DEBRIS BASIN CLEANOUT COST COMPUTATION

Using 10-wheeler Trucks (8 c. y. load)

DEBRIS BASIN Fieldbrook   CALCULATED BY LPS   DATE 4/14/03
CHECKED BY ______   DATE ______

SPS SITE Manning

BASIN MAXIMUM CAPACITY in Cu. Yds.	11,000	c.y.	
VOLUME REMOVED PER CLEANOUT =	2,000	c.y.	(A)
HAUL DISTANCE (round trip) in miles	23.61	miles	(B)
AVERAGE SPEED OF TRUCKS in miles per hour =	20	mph	(C)
TRAVEL TIME (roundtrip) = [(B)/(C)]*60min/hr =	70.8	min.	(D)
LOAD TIME (varies from 1 - 3 minutes) =	1.5	min.	(E)
DUMP TIME (varies from 1 - 2 minutes) =	1.5	min.	(F)
TOTAL CYCLE TIME = (D) + (E) + (F) =	73.8	min.	(G)

NUMBER OF LOADS/DAY:

10 hrs/day x 50 min/hr / (E) = 333.33 (H)

NUMBER OF LOADS/TRUCK/DAY:

10 hrs/day x 50 min/hr / (G) = 7

NUMBER OF TRUCKS REQUIRED:

TOTAL CYCLE TIME / (E) = 49 trucks (I)

NUMBER OF CUBIC YARDS MOVED/DAY:

TYPE OF EQUIPMENT	APPROXIMATE CAPACITY (c.y./load)
10-wheeler truck - 3 axle	8
18-wheeler dump truck - 5 axle	16
Scraper, model 631D	25

Use 10-wheeler truck, CAPACITY =	8	c.y./load	(J)
(H) x (J) =	2667	c.y./day	(K)
CLEANOUT DURATION (working days) = (A)/(K) =	1	days	(L)

HAUL COST:

TYPE OF EQUIPMENT (operated & maintained)	monday - friday - saturday	sunday & holiday
10-wheeler truck - 3 axle	varies $53/hr to $60/hr.	
18-wheeler dump truck - 5 axle	varies $63/hr to $66/hr.	
Scraper, model 631D	$160/hr	

EQUIPMENT HOURLY RATE (10-wheeler truck) =	$56.00	(M)
(I) x (M) x (10hr/day) x (L) =	$20,672.40	

LOADING COST:

3 - D8 DOZERS @ $137/hr x (10hr/day) = $4110/day x (L) =	$3,082.50
1 - 977 LOADER @ $120/hr x (10hr/day) = $1200/day x (L) =	$900.00
3 - LABORERS @ $30.20/hr x (10hr/day) = $906/day x (L) =	$679.50
MOBILIZATION/DEMOBILIZATION (lump sum), assume $1,500 =	$1,500.00

SPREADING COST:

3 - D8 DOZER @ $137/hr x (10hr/day) = $4110/day x (L) =	$3,082.50
1 - 4000 gal. WATER TRUCK @ $60/hr x (10hr/day) = $600/day x (L) =	$450.00
3 - LABORERS @ $30.20/hr x (10hr/day) = $906/day x (L) =	$679.50
MOBILIZATION/DEMOBILIZATION (lump sum), assume $1,500 =	$1,500.00

OTHER COST:

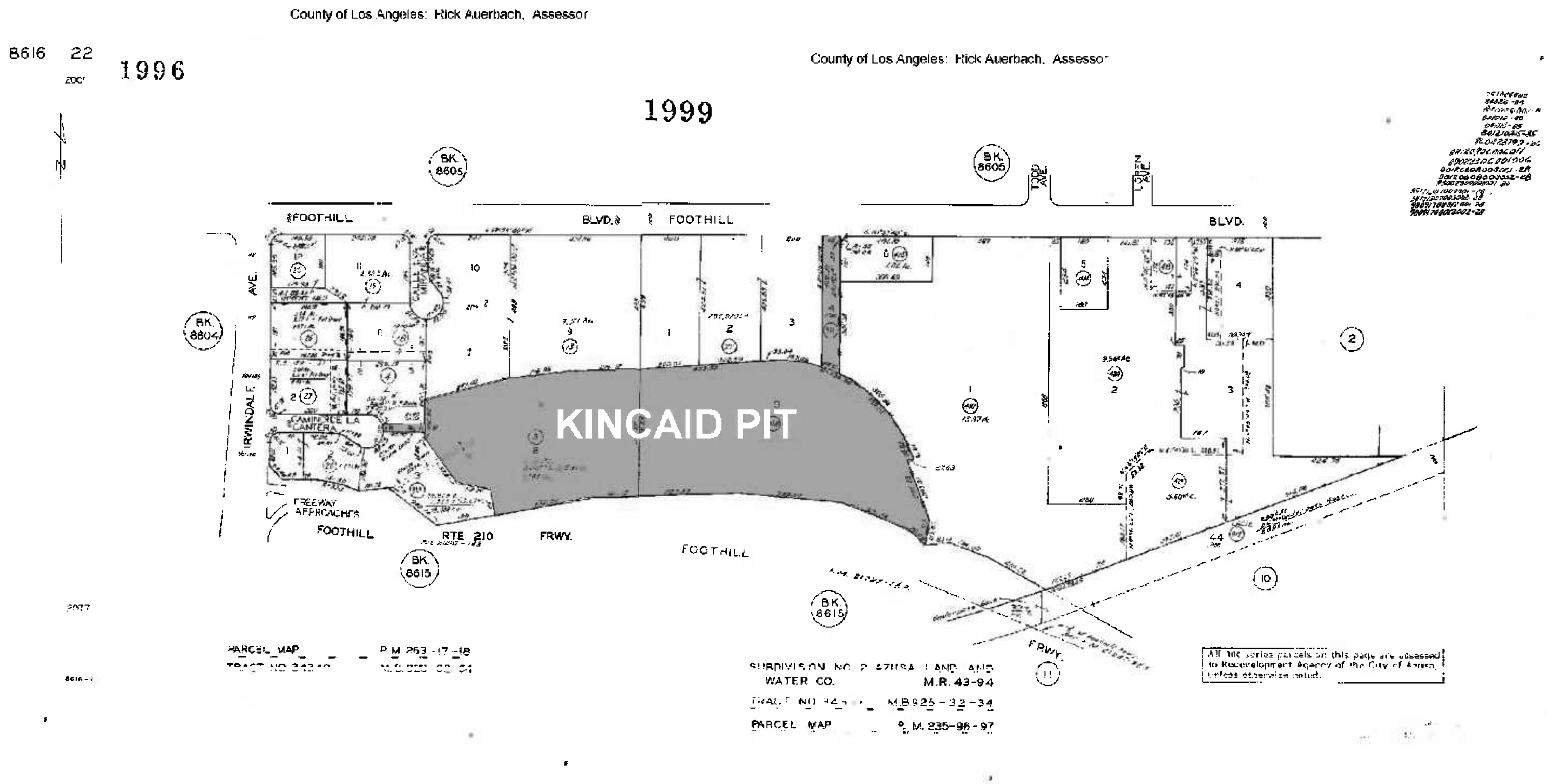
1 - FOREMAN @ $61.25/hr x (10hr/day) = $612.50/day x (L) =	$459.38
1 - ASSISTANT FOREMAN @ $33.62/hr x (10hr/day) = $336.2/day x (L) =	$252.15
1 - FOREMAN'S PICKUP TRUCK @ $0.75/mile x (125miles/day) = $93.75/day x (L) =	$70.31

TOTAL COST =	**$33,328.24**	(N)
COST PER CUBIC YARD = (N)/(A) =	**$16.66**	

APPENDIX D

Kincaid Pit Access Improvements


FOOTHILL
ONLY
COSTCO PARKING
LOT ENTRANCE
EXIT
CAMINO DE LA
CANTERRA
ENTRANCE
DENNY'S


County of Los Angeles: Rick Auerbach, Assessor
8616 22
1996
County of Los Angeles: Rick Auerbach, Assessor
1999
BK. 8605
FOOTHILL
BLVD.
FOOTHILL
BLVD.
TODD AVE.
LOREN AVE.
BK. 8604
IRWINDALE AVE.
CAMINO DE LA CANTERA
FREEWAY APPROACHES
FOOTHILL
RTE. 210
FRWY.
FOOTHILL
BK. 8615
KINCAID PIT
FRWY.
PARCEL MAP P.M. 263-17-18
SUBDIVISION NO. 2 AZUSA LAND AND WATER CO. M.R. 43-94
PARCEL MAP P.M. 235-96-97
All 100 series parcels on this page are assessed to Redevelopment Agency of the City of Azusa, unless otherwise noted.

APPENDIX E

Five Percent Assumption for Determining Annual Sedimentation

Five Percent Assumption for Calculating Annual Sedimentation for New Facilities

This assumption is based on historical data collected for the debris control facilities maintained and operated by Public Works. The data indicates that it takes on average about 20 years for a facility to collect a sediment amount equal to the basins capacity. In other words, on average a facility will receive annually a sediment accumulation equivalent to about 5 percent of the basins capacity. This assumption is not exact, but it is a very good estimation of annual sedimentation amounts for planning purposes in regards to recently built or anticipated debris control facilities.

APPENDIX F

Public Works' SPS Development Policy

PUBLIC WORKS' SPS DEVELOPMENT POLICY

For purposes of this policy, the process of permit acquisition and regulatory compliance are omitted to focus on the actual mechanics of developing an SPS.

Design Procedure

Once a location for an SPS has been determined Design Division or Water Resources Division will prepare an ultimate fill plan. Working in concert with Survey Division a topographic map is prepared to assist designers in determining where and how to place sediment and any necessary drainage improvements that will be required. Additionally, a thorough examination of the site should be conducted to identify and address site features of concern (e.g., low points, artesian wells, etc.) to avoid stagnant pools of water and future drainage problems. Upon completion of the ultimate fill plan, site preparation can begin.

Site Preparation

Once the ultimate fill plan is developed, crews can prepare for sediment placement within the site sufficient to contain the sediment volume anticipated for the clean-out season. The first step includes clearing and grubbing the area of all organic material, leaving the area bare and ready to accept new material. Where the slope of the existing grade within the area exceeds 5:1, benches will need to be cut into the hillside to provide for the stability of any fill material placed against it (see attached schematic cross-section). Fencing should be installed at specific locations (e.g. adjacent to streets, hiking trails, occupied properties) to prohibit unauthorized entry into the SPS. Adequate vehicular access and a staging area should also be constructed prior to the placement of any sediment.

Sediment Placement

With site preparation completed sediment hauling operations can begin. The filling of an SPS is done in lifts of 20 to 25 feet depending on the ultimate fill plan. Material is typically dumped in place and pushed into position with a bulldozer or grader. As the fill material reaches the buttress area the sediment will need to be compacted. Sediment in the buttress area should be deposited in roughly one-foot lifts. Compaction can be carried out simply by repeatedly driving a piece of heavy equipment (e.g. D8 Bulldozer, IT28 loader) over the lift until 88% relative compaction is achieved. The buttress is sloped at a maximum of 2:1. Once the buttress area is filled to the height of the previously placed fill, the process is repeated. As the lifts continue upwards adequate vehicular access must still be maintained. 25 foot wide access roads are required to provide for bi-directional hauling traffic. Access roads are typically paved when grades exceed 10% and may feature v-ditch drainage, if required. At each lift a bench is required prior to beginning the next lift. These benches at a minimum are 8 feet wide when paved and 15 feet wide when unpaved. In some cases the benches will also include v-ditch drainage systems in order to prevent erosion of lower buttress faces.

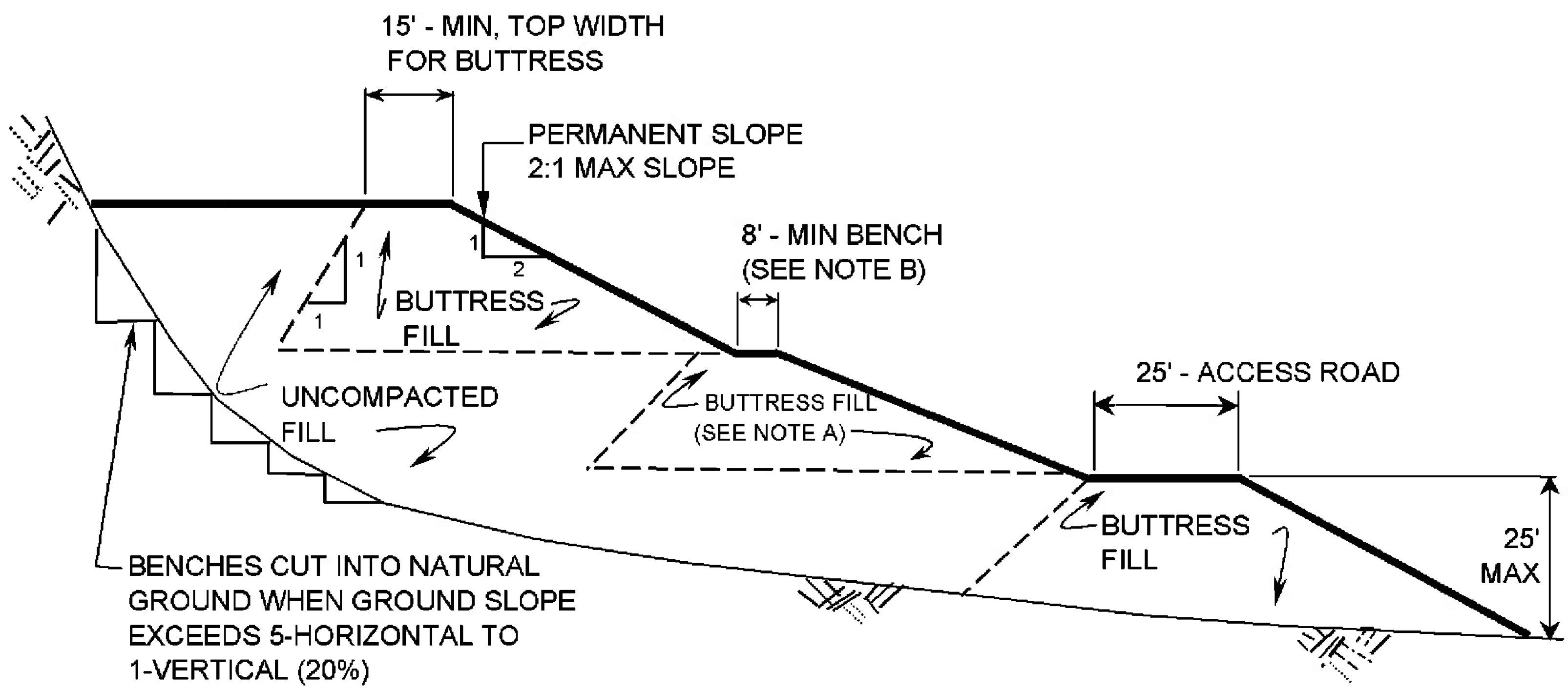
Design of the drainage system is included within the ultimate fill plan. In some cases adjustments in the field may be done by appropriate engineering staff.

Interim SPS Maintenance

SPSs are designed for large amounts of sediment and are never filled to capacity with one initial operation. However, an SPS doesn't just sit waiting for a clean-out. SPSs thus require regular maintenance and corrective work to ensure their safe and continued operation.

SPS maintenance is required to ensure the SPS is ready to accept future sediment without requiring any significant preparation. The main component of SPS maintenance is weed control. Application of herbicide to the top lifts and buttress faces, which will be buried by subsequent placement projects, reduce the scope of clearing or grubbing needed for future operations. The spray crew conducts routine herbicide applications at SPSs per Maintenance Management System (MMS) Work Orders. The absence of organic material from the lifts and buttress faces also eliminates the fire risk to adjacent properties, and damage to the lifts caused by dying plants whose root structures would leave voids that can make the fill material vulnerable to erosion.

Other SPS maintenance activities scheduled through MMS include clearing of v-ditch drainage channels, access road clearing, debris basin maintenance (in those SPSs with debris basins), inlet clearing and facility inspections. SPSs are also included in storm patrols in areas where erosion/debris flows are expected, to ensure the sites operate as designed.



NOTE:

(A) BUTTRESS FILLS ARE COMPACTED TO 88% RELATIVE DENSITY

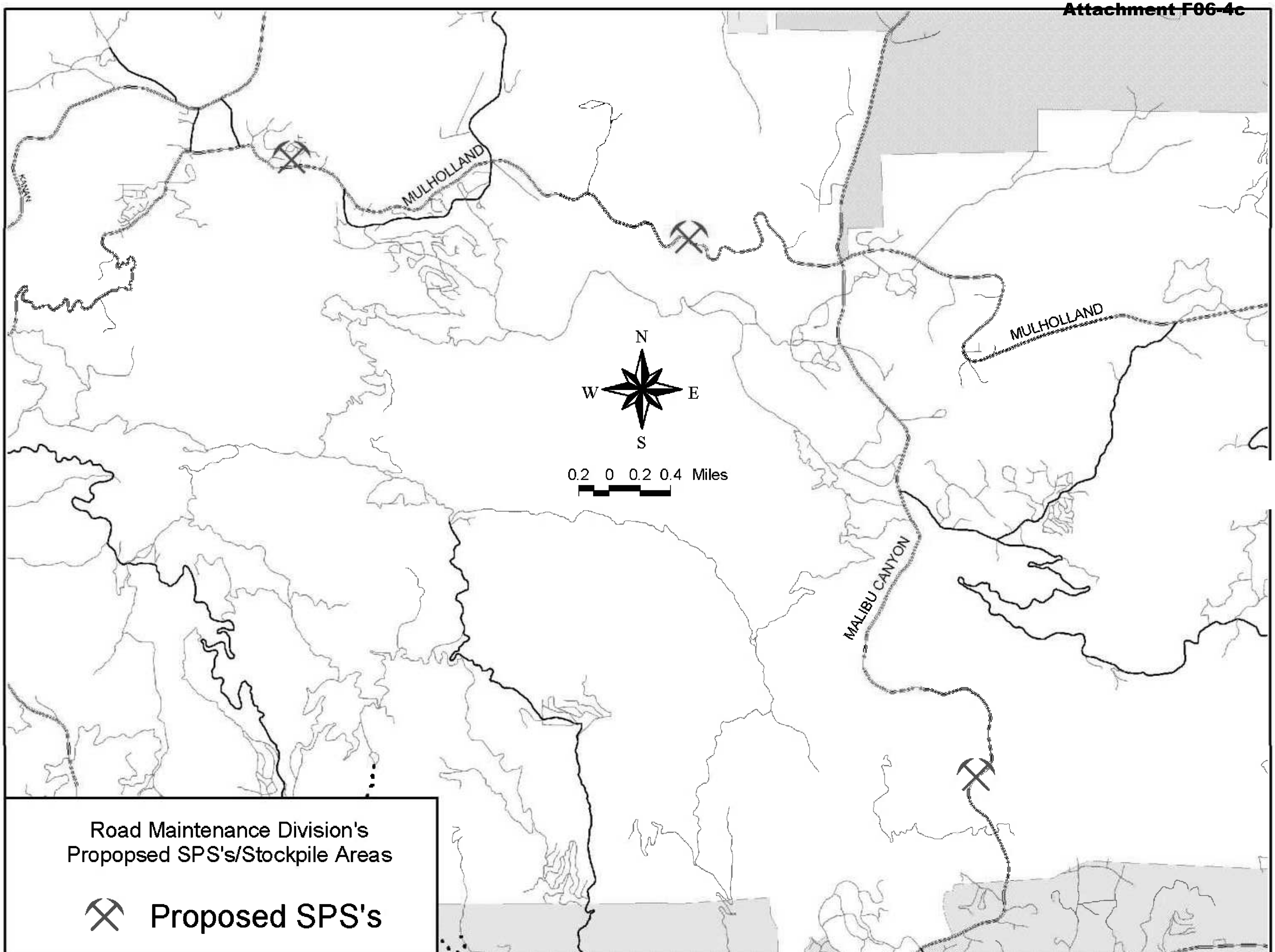
(B) 8' BENCHES ARE PAVED. WHEN UNPAVED, THE BENCH WIDTH IS USUALLY 15'.

PREPARED C BABAKHAN	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE 9/26/2005	TYPICAL SEDIMENT PLACEMENT SITE CROSS - SECTION
NOT TO SCALE	

P:WRD/GENERAL/SEDIMENT MANAGEMENT/3.2/SPS FILL CROSS SECTION SCHEMATIC.XLS

APPENDIX G

Road Maintenance Division's Potential SPS Location Maps


MULHOLLAND
MULHOLLAND
MALIBU CANYON
N
W
E
S
0.2 0 0.2 0.4 Miles
Road Maintenance Division's
Propopsed SPS's/Stockpile Areas
Proposed SPS's

APPENDIX H

ASTM D 2974-87 Organic Content Standard

ASTM D 2974-87 Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103. Reprinted from the Annual Book of ASTM Standards, Copyright ASTM.

THIS STANDARD is issued under the fixed designation D 2974; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

These test methods are under the jurisdiction of ASTM Committee D-18 on Soil and Rock and are the direct responsibility of Subcommittee D18.18 on Peats and Related Materials.

Current edition approved May 29, 1987. Published July 1987. Originally published as D 2974 - 71. Last previous edition D 2974 - 84.

1. Scope

1.1 These test methods cover the measurement of moisture content, ash content, and organic matter in peats and other organic soils, such as organic clays, silts, and mucks.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Summary of Methods

2.1 *Method A* — Moisture is determined by drying a peat or organic soil sample at 105°C. The moisture content is expressed either as a percent of the oven dry mass or of the as-received mass.

2.2 *Method B* — This is an alternative moisture method which removes the total moisture in two steps: (I) evaporation of moisture in air at room temperature (air-drying), and (2) the subsequent oven drying of the air-dried sample at 105°C. This method provides a more stable sample, the air-dried sample, when tests for nitrogen, pH, cation exchange, and the like are to be made.

2.3 *Methods C and D* — Ash content of a peat or organic soil sample is determined by igniting the oven-dried sample from the moisture content determination in a muffle furnace at 440°C (Method C) or 750°C (Method D). The substance remaining after ignition is the ash. The ash content is expressed as a percentage of the mass of the oven-dried sample.

2.4 Organic matter is determined by subtracting percent ash content from 100.

3. Apparatus

3.1 *Oven,* capable of being regulated to a constant temperature of 105 ± 5°C.

NOTE — The temperature of 105°C is quite critical for organic soils. The oven should be checked for "hot spots" to avoid possible ignition of the specimen.

3.2 *Muffle Furnace*, capable of producing constant temperatures of 440°C and 750°C.

3.3 *Evaporating Dishes,* of high silica or porcelain of not less than 100 mL capacity.

3.4 *Blender,* high-speed.

3.5 *Aluminum Foil,* heavy-duty.

3.6 *Porcelain Pan, Spoons,* and equipment of the like.

3.7 *Desiccator:*

4. Preparation of Sample

4.1 Place a representative field sample on a square rubber sheet, oil cloth, or equivalent material. Reduce the sample to the quantity required by quartering and place in a moisture-proof container. Work rapidly to prevent moisture loss or perform the operation in a room with a high humidity.

Moisture Content

5. Method A

5.1 Record to the nearest 0.01 g the mass of a high-silica or porcelain evaporating dish fitted with a heavy-duty aluminum foil cover. The dish shall have a capacity of not less than 100 mL.

5.2 Mix thoroughly the representative sample and place a test specimen of at least 50 g in the container described in 5.1. Crush soft lumps with a spoon or spatula. The thickness of peat in the container should not exceed 3 cm.

5.3 Cover immediately with the aluminum foil cover and record the mass to the nearest 0.01 g.

5.4 Dry uncovered for at least 16 h at 105°C or until there is no change in mass of the sample after further drying periods in excess of 1 h. Remove from the oven, cover tightly, cool in a desiccator, and record the mass.

6. Method A Calculation

6.1 Calculate the moisture content as follows:

$$\text{Moisture Content, \%} = [(A - B) \times 100]/A$$

where:

A = mass of the as-received test specimen, g, and

B = mass of the oven-dried specimen, g.

6.1.1 This calculation is used primarily for agriculture, forestry, energy, and horticultural purposes, and the result should be referred to as the moisture content as a percentage of as-received or total mass.

6.2 An alternative calculation is as follows:

$$\text{Moisture Content, \%} = [(A - B) \times 100]/B$$

where:

A = as-received test specimen, g, and

B = mass of the oven-dried specimen, g.

6.2.1 This calculation is used primarily for geotechnical purposes, and the result should be referred to as the moisture content as a percentage of oven-dried mass.

6.3 Take care to indicate the calculation method used.

7. Method B

7.1 This method should be used if pH, nitrogen content, cation exchange capacity, and the like are to be tested.

7.2 Mix the sample thoroughly and select a 100 to 300 g representative sample. Determine the mass of this sample and spread evenly on a large flat pan. Crush soft lumps with a spoon or spatula and let the sample come to moisture equilibrium with room air. This will require at least 24 h. Stir occasionally to maintain maximum air exposure of the entire sample. When the mass of the sample reaches a constant value, calculate the moisture removed during air drying as a percentage of the as-received mass.

7.3 Grind a representative portion of the air-dried sample for 1 to 2 min in a high-speed blender. Use the ground portion for moisture, ash, nitrogen, cation exchange capacity tests, and the like.

7.4 Thoroughly mix the air-dried, ground sample. Weigh to the nearest 0.01 g the equivalent of 50 g of test specimen on an as-received basis. Determine the amount, in grams, of air-dried sample equivalent to 50 g of as-received sample, as follows:

Equivalent Sample Mass, g = 50.0 + $[(50 \times M)/100]$

where:

M = moisture removed in air drying, %.

7.5 Place the sample in a container as described in 5.1 and proceed as in Method A.

A muffle furnace used for organic matter analysis.

8. Method B Calculation

8.1 Calculate the moisture content as follows:

Moisture Content, % = $(50 - B) \times 2$

where:

B = oven-dried sample, g.

8.1.1 This calculation gives moisture content as a percentage of as-received mass.

8.2 An alternative calculation is as follows:

Moisture Content, % = $[(50 - B) \times 100]/B$

8.2.1 This calculation gives moisture content as a percentage of oven-dried mass.

Ash Content

9. Method C

9.1 Determine the mass of a covered high-silica or porcelain dish.

9.2 Place a part of or all of the oven-dried test specimen from a moisture determination in the dish and determine the mass of the dish and specimen.

9.3 Remove the cover and place the dish in a muffle furnace. Gradually bring the temperature in the furnace to 440°C and hold until the specimen is completely ashed (no change of mass occurs after a further period of heating).

9.4 Cover with the retained aluminum foil cover, cool in a desiccator, and determine the mass.

9.5 This method should be used for all geotechnical and general classification purposes.

10. Method D

10.1 Determine the mass of a covered high-silica or porcelain dish.

10.2 Place a part of or all of the oven-dried test specimen from a moisture determination in the dish and determine the mass of the dish and specimen.

10.3 Remove the cover and place the dish in a muffle furnace. Gradually bring the temperature in the furnace to 750°C and hold until the specimen is completely ashed (no change of mass occurs after a further period of heating).

10.4 Cover with the retained aluminum foil cover, cool in a desiccator, and determine the mass.

10.5 This method should be used when peats are being evaluated for use as a fuel.

11. Calculation for Methods C and D

11.1 Calculate the ash content as follows:

Ash Content, % = (C X **100)/*B***

where:

C = ash, g, and

B = oven-dried test specimen, g.

Organic Matter

12. Calculation

12.1 Determine the amount of organic matter by difference, as follows:

Organic matter, % = 100.0 - *D*

where:

D = ash content, %.

13. Report

13.1 Report the following information:

13.1.1 Results for organic matter and ash content, to the nearest 0.1%.

13.1.2 Furnace temperature used for ash content determinations.

13.1.3 Whether moisture contents are by proportion of as-received mass or oven-dried mass.

13 1.3.1 Express results for moisture content as a percentage of as-received mass to the nearest 0.1%.

13.1.3.2 Express results for moisture content as a percentage of oven-dried mass as follows:

(a) Below 100% to the nearest 1%.

(*b*) Between 100% and 500% to the nearest 5%.

(c) Between 500% and 1000% to the nearest 10%.

(*d*) Above 1000% to the nearest 20%.

14. Precision and Bias

14.1 The precision and bias of these test methods have not been determined. Data are being sought for use in developing a precision and bias statement.

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited eitherfor revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing, you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, PA 19103.

ASTMC-88-90

Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C-131-89

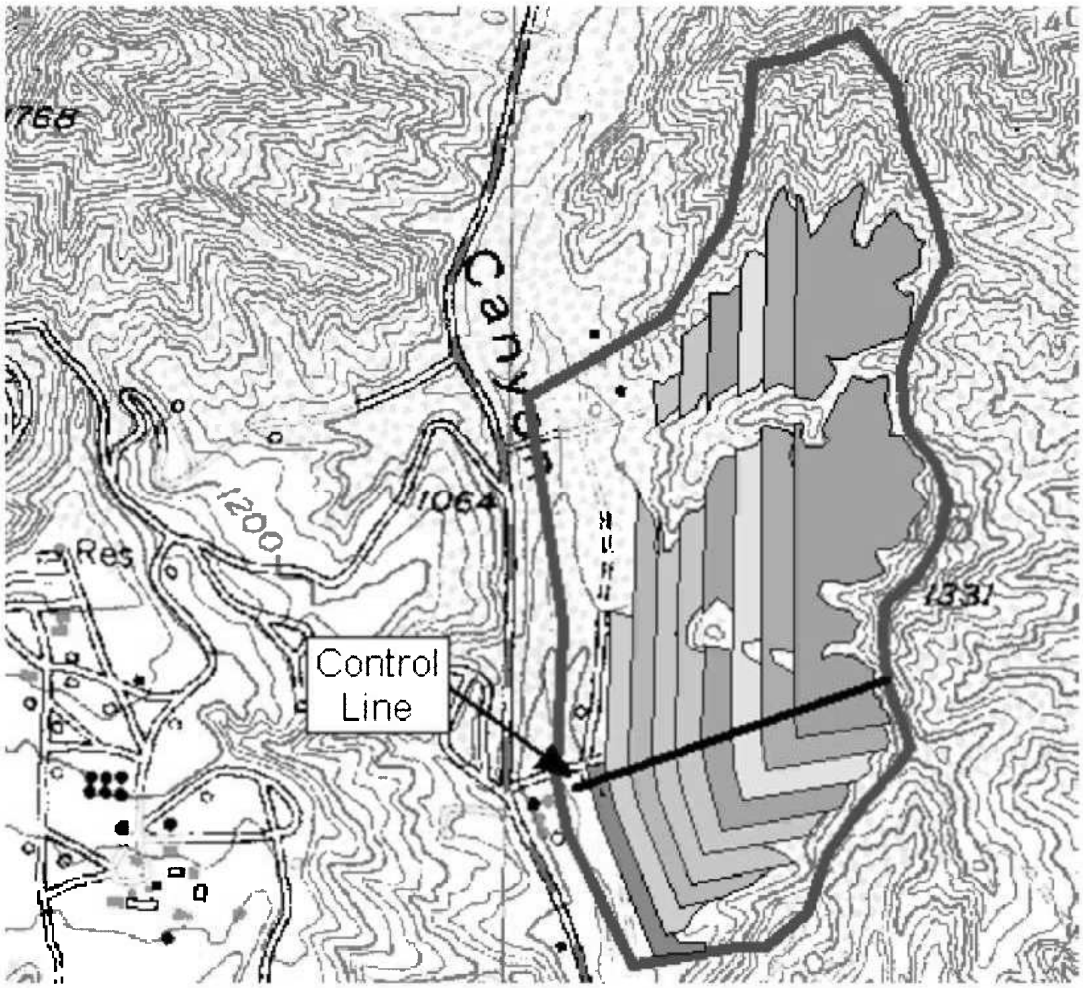
Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

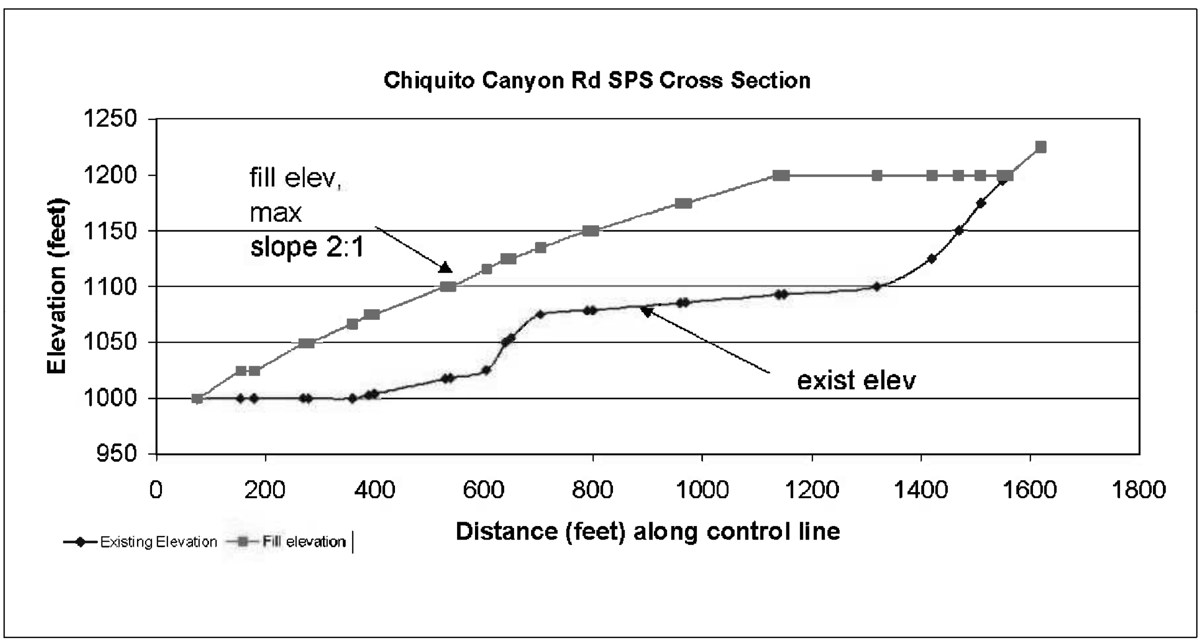
ASTM procedures C-88-90 and C-131-89 are special situation tests that rarely will be required, and have not been published here. They are available from the American Society of Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

APPENDIX I

Proposed Santa Clara River Area SPSs - Conceptual Fill Plans and Profiles

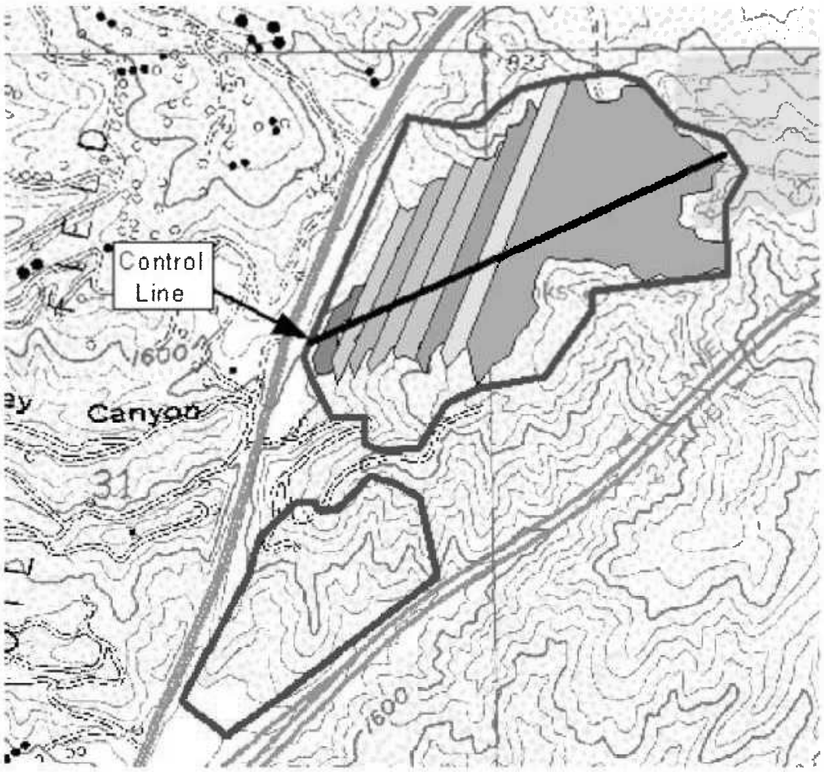
Chiquito Canyon Rd SPS
Conceptual fill plan & cross section

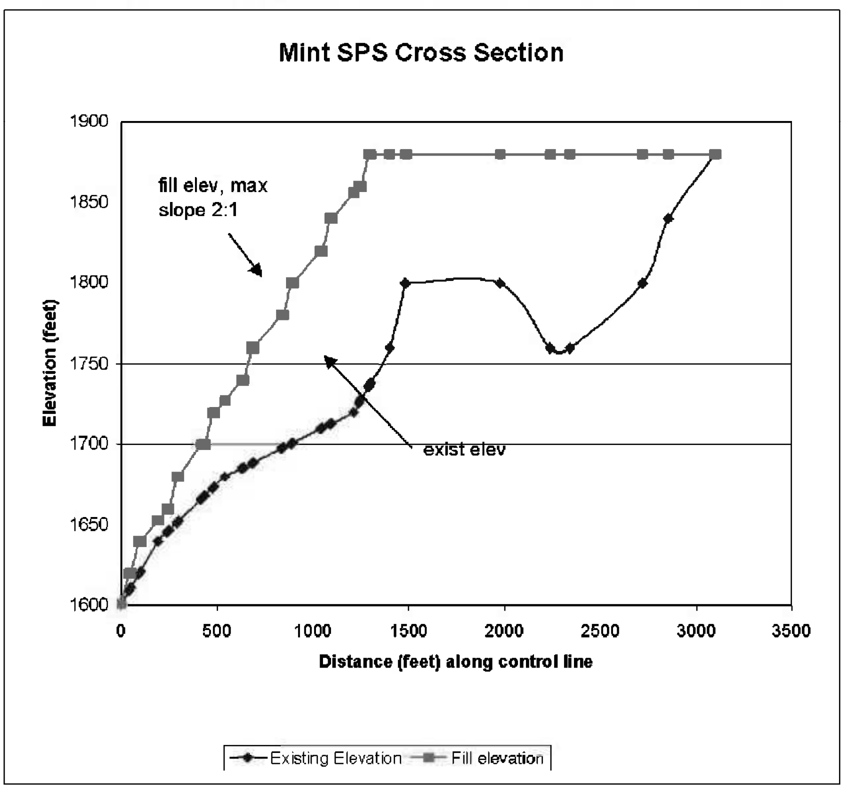




P:wrd/general/sediment managment plan/3.2/Chiquito Cyn SPS.xls

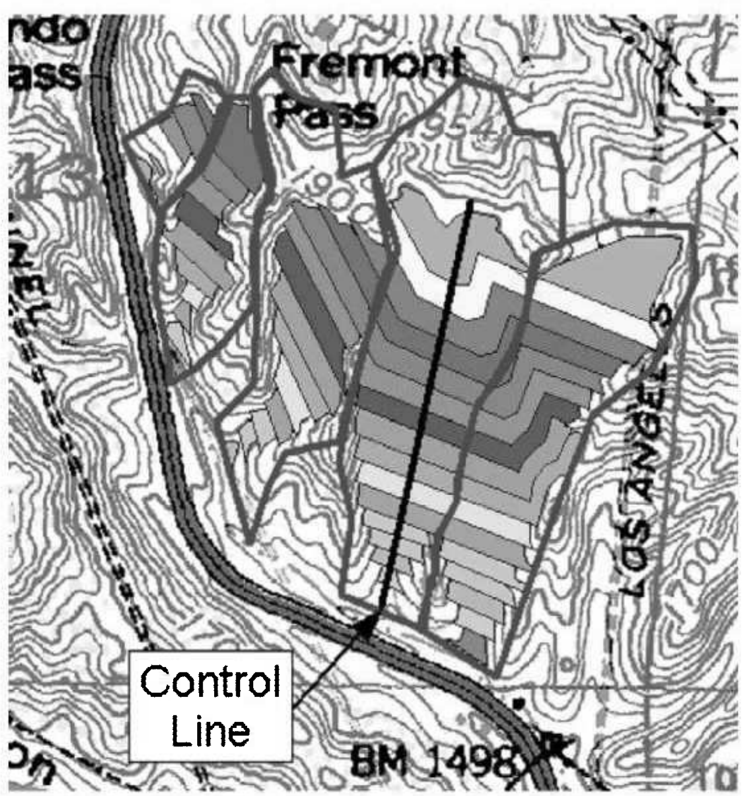
Sierra Highway/Antelope Valley Freeway SPS
Conceptual fill plan & cross section

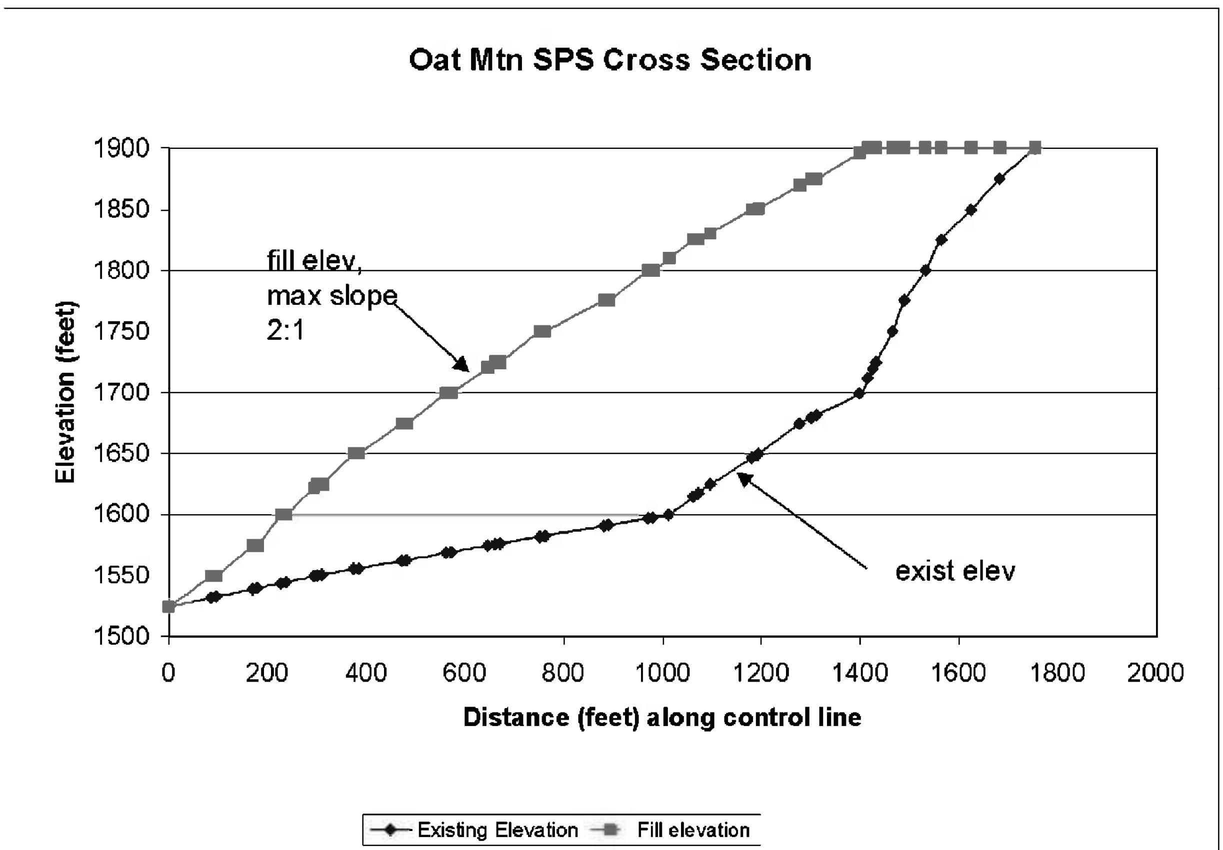




P:wrd/general/sediment managment plan/3.2/Sierra Hwy & Antel Vally frw - mint quad.xls

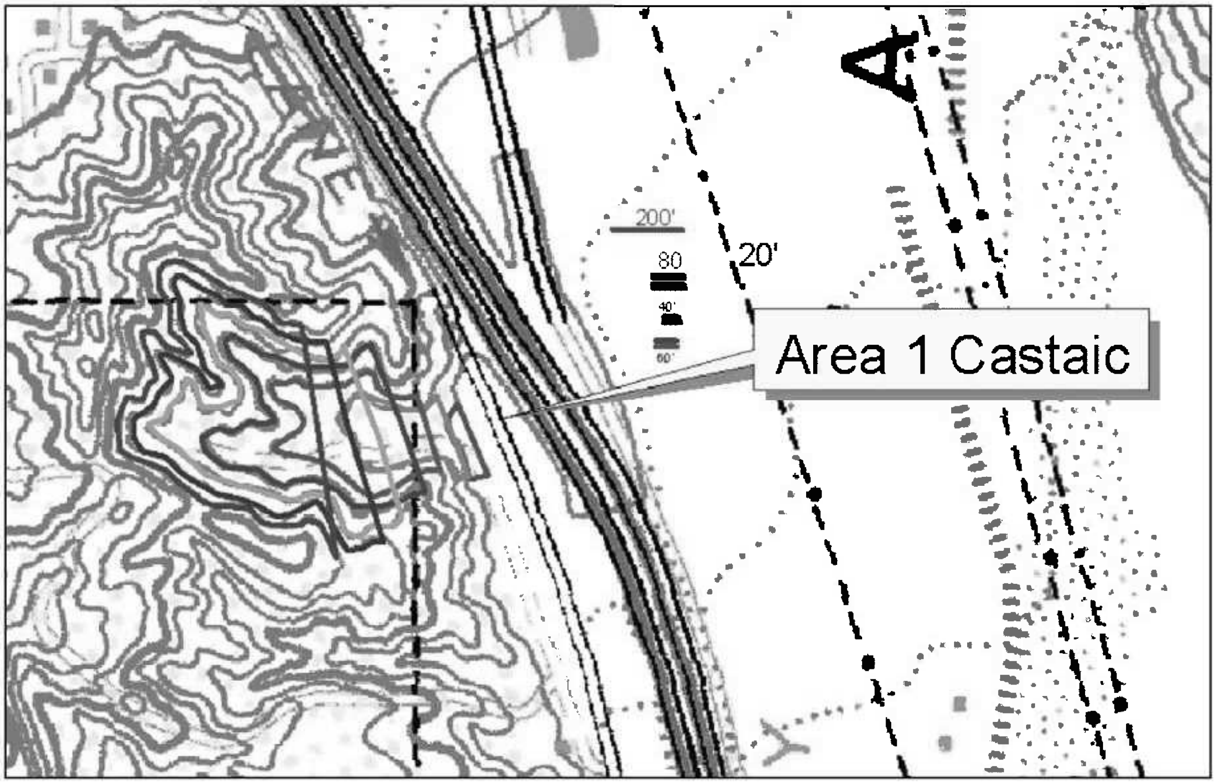
Sierra Highway/Clampitt Rd SPS
Conceptual fill plan & cross section

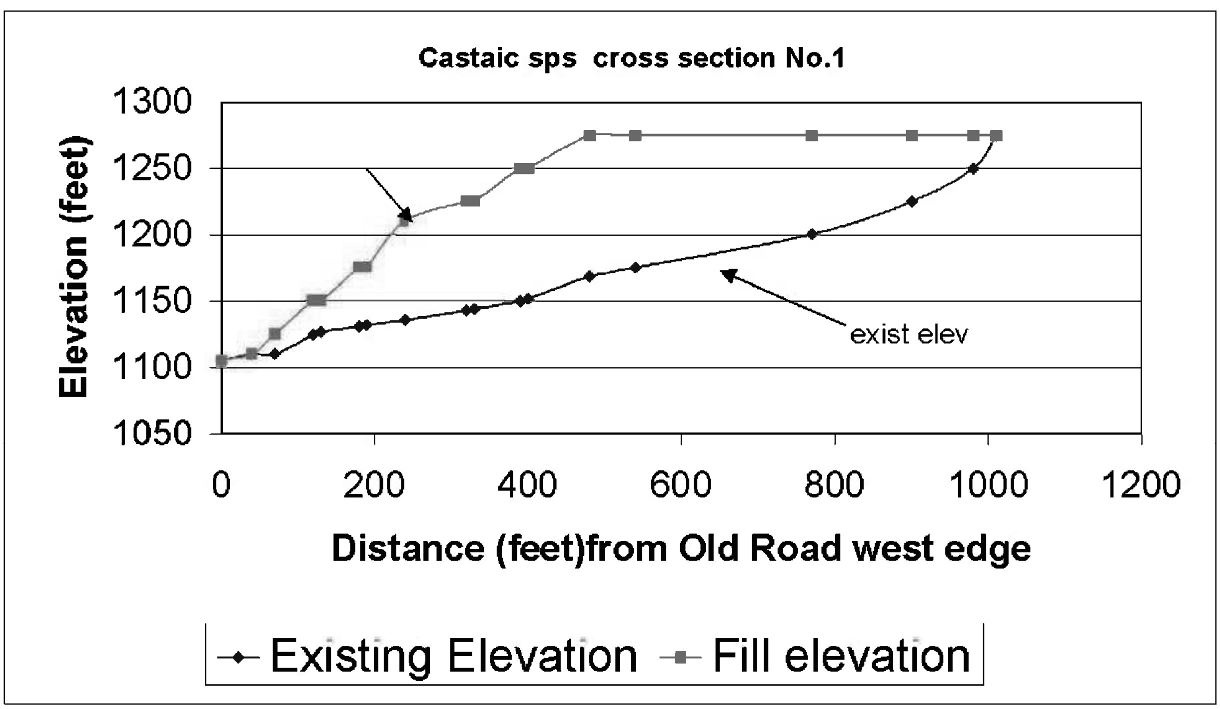




P:wrd/general/sediment management plan/3.2/oat mtn sps vol calc sr hwy & I 14.xls

Castaic - Old Road SPS
Conceptual fill plan & cross section



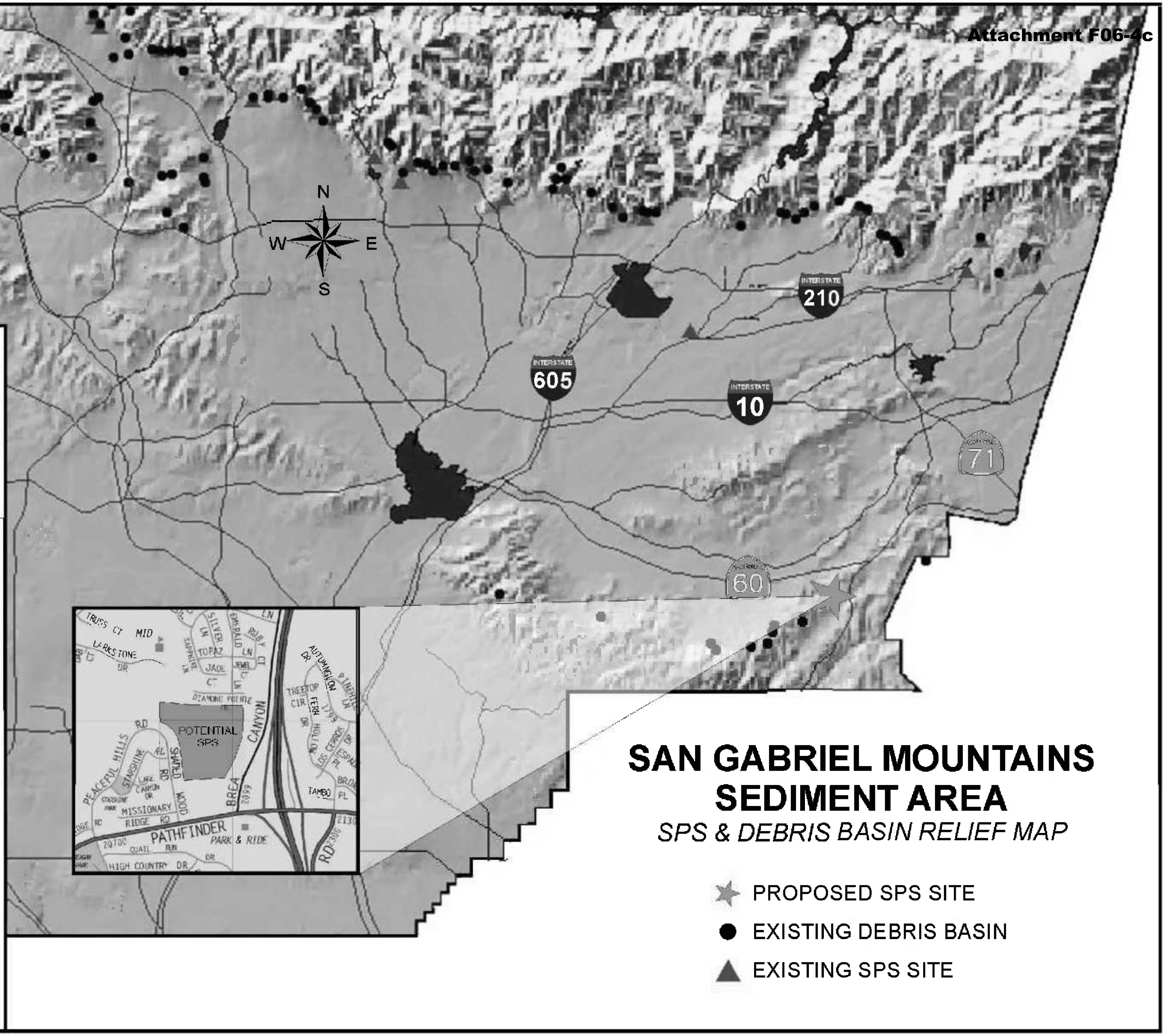


P:wrd/general/sediment management plan/3.2/castai sps vol calc sps.xls

APPENDIX J

Proposed Diamond Bar and Santa Clara River Areas SPSs - Relief Maps

Attachment F06-4c



LOS ANGELES COUNTY
DEPT. OF PUBLIC WORKS

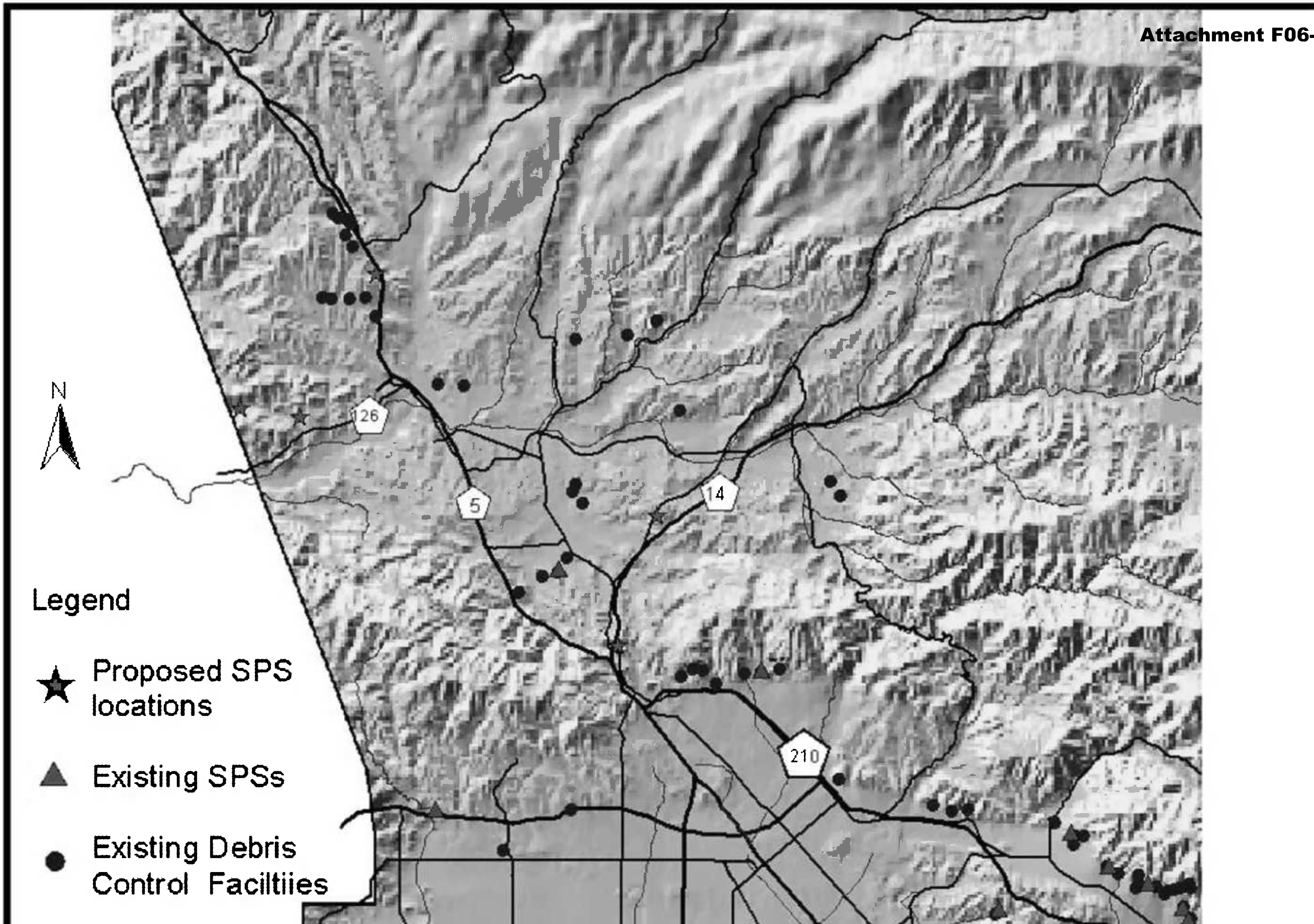
DIAMOND BAR AREA
POTENTIAL SPS SITE

Scale:
None

Thomas Guide:
N/A

Prepared By:
R. Romo

Date:
9-20-2005

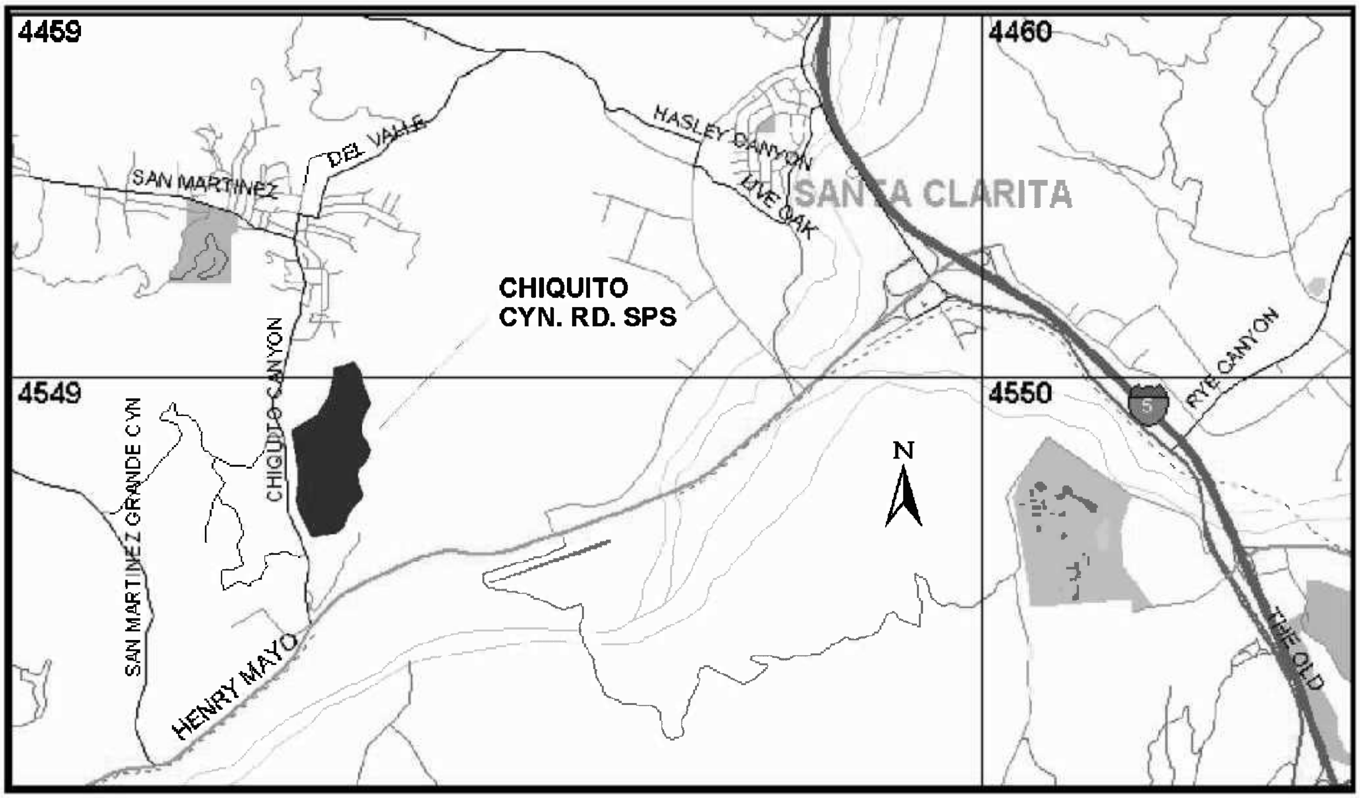


0 3 6 9 12 15 Miles

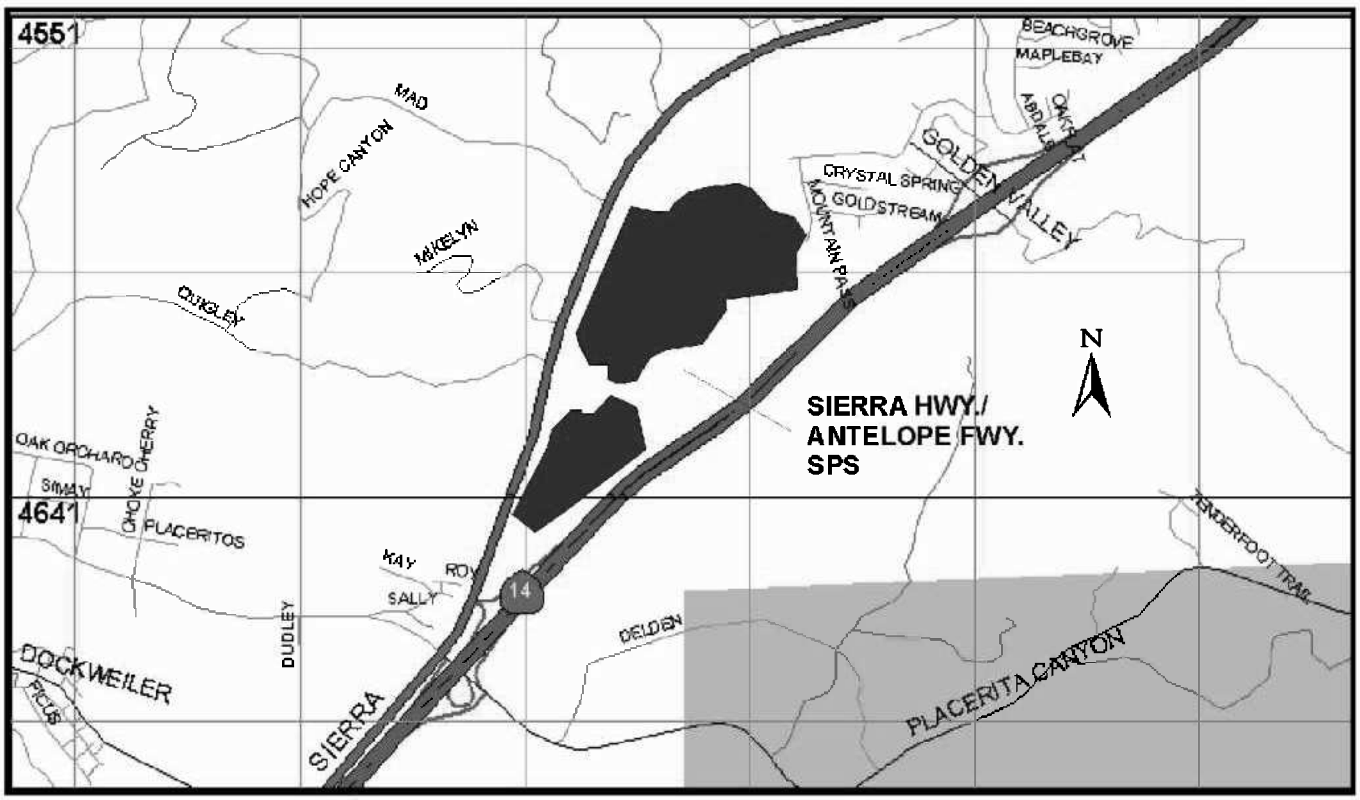
Prepared by: JAB	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Date: 9-20-2005	SANTA CLARA RIVER AREA POTENTIAL SPS SITE(S)

APPENDIX K

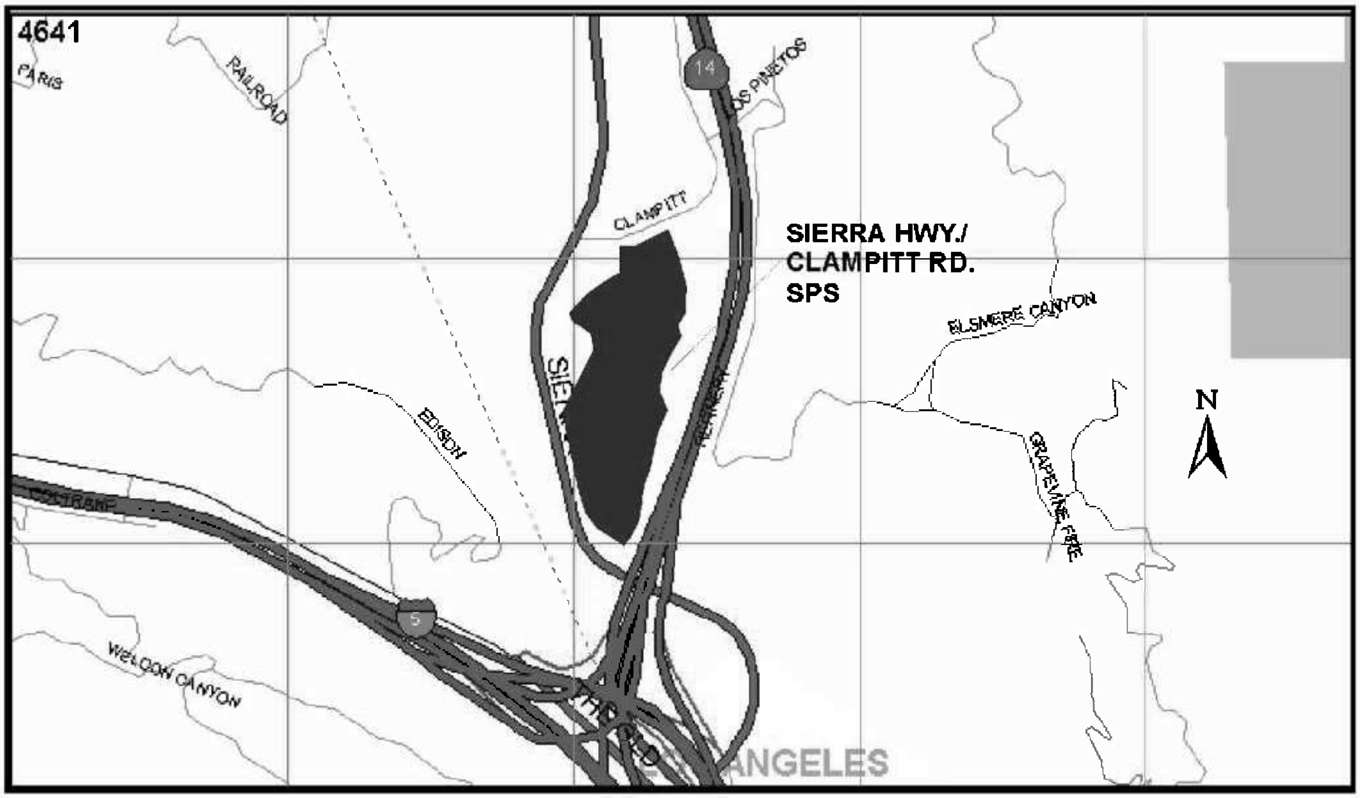
Proposed Diamond Bar and Santa Clara River Areas SPSs Location Maps



PREPARED	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
R. T. ROMO	
DATE	Chiquito Canyon Road Potential SPS
10-31-2005	
T.G. PAGE	
4549	

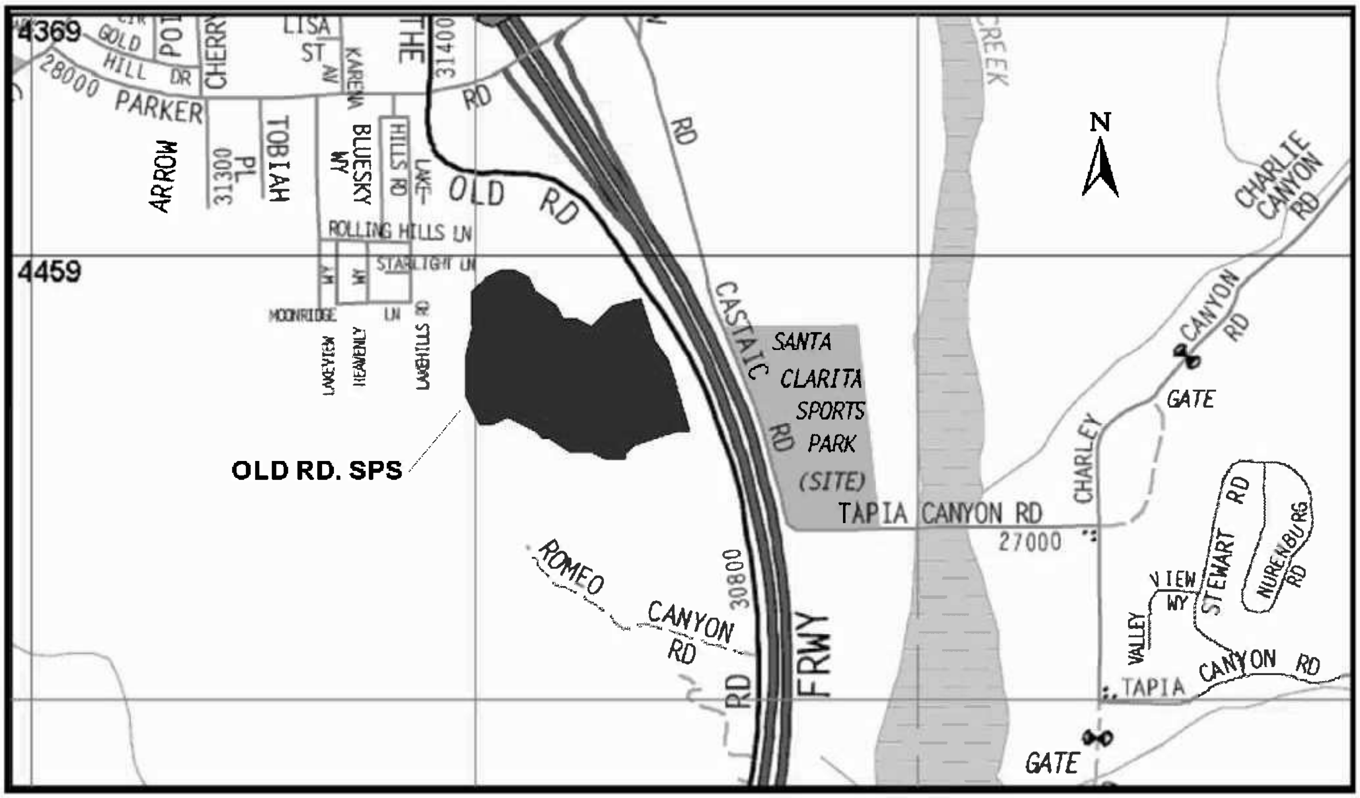


PREPARED	LOS ANGELES COUNTY
R. T. ROMO	FLOOD CONTROL DISTRICT
DATE	Sierra Highway/Antelope Valley Freeway Potential SPS
10-31-2005	
T.G. PAGE	
4551	



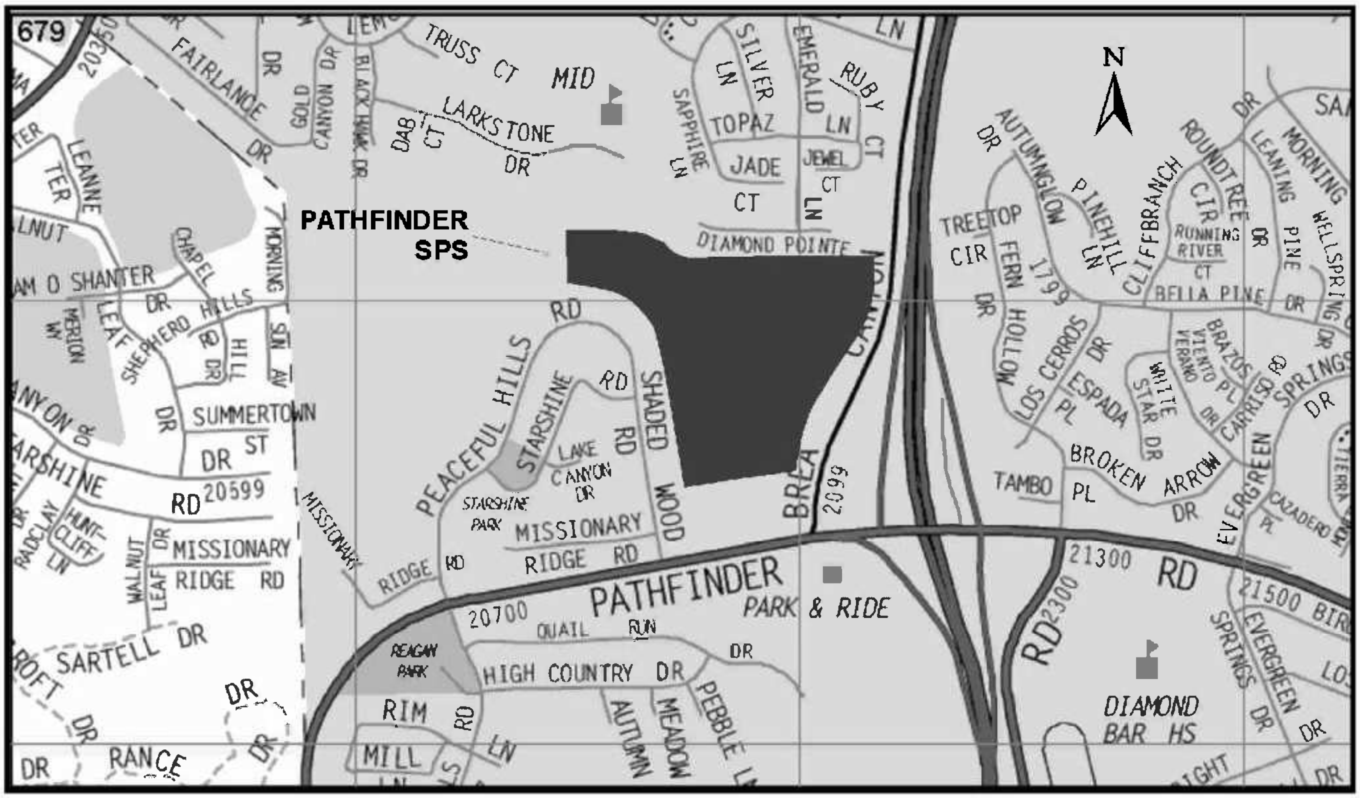
PREPARED	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
R. T. ROMO	
DATE	Sierra Highway/Clampitt Road Potential SPS
10-31-2005	
T.G. PAGE	
4641	

Attachment F06-4c



PREPARED R. T. ROMO	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
DATE 10-31-2005 T.G. PAGE 4459	Old Road Potential SPS

Attachment F06-4c



PREPARED	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
R. T. ROMO	
DATE 10-31-2005	Pathfinder Potential SPS
T.G. PAGE 679	

APPENDIX L

SPS General Information Table

	Name of SPS	Area (Acres)	Estimated Remaining Capacity (cy)	Estimated Remaining Life (yrs)	Proposed Usage[1]	Distance to Next Closest Viable SPS (miles)	Next Closest ViableSPS	Location (City, County, USFS, Private)
1	Aqua Vista	1.8	12,100	16	SPS	15.2	Hay	City of Los Angeles
2	Auburn	1.6	4,300	8	SELL/DR	2.2	Hastings	City of Sierra Madre
3	Bailey	3.3	130,800	23	SELL/DR	1.5	Hastings	City of Sierra Madre
4	Big Tujunga	87.9	150,000	1	SPS	3.2	Maple Canyon	USFS
5	Browns	19.2	134,200	3	SPS	14.6	May	City of Los Angeles
6	Burro Canyon	120.0	30,000,000	59	SPS	10.3	Cogswell	USFS
7	Cogswell	80.0	2,531,000	10	SPS	10.3	Burro	USFS
8	Dalton	34.4	0	0	SPS	10.1	Webb	City of Glendora
9	Dunsmuir	37.5	1,067,400	57	SPS	2.2	Eagle Canyon	City of Glendale
10	Eagle	5.9	25,000	9	SPS	2.2	Dunsmuir	County of Los Angeles
11	Eaton	10.5	0	0	SELL	5.7	Santa Anita	City of Pasadena/County of Los Angeles
12	Hastings Cyn	8.7	143,400	51	SPS	5.4	Santa Anita	City of Pasadena
13	Hay	42.7	82,800	64	SPS	4.3	Eagle Canyon	City of La Canada Flintridge
14	La Tuna	61.6	3,506,600	2505	SELL/DR	5.5	Dunsmuir	City of Los Angeles
15	Las Flores	1.4	16,500	4	SELL	2.2	Lincoln	County of Los Angeles
16	Lincoln	26.0	54,500	11	SPS	6.8	Hay	County of Los Angeles
17	Live Oak	10.2	296,100	47	SELL	1.2	Webb	City of Claremont/County of Los Angeles
18	Maddock	10.1	437,400	557	SPS	2.7	Spinks	City of Duarte
19	Manning Pit	81.0	2,717,400	19	SPS	4.6	Maddock	City of Irwindale
20	Maple Cyn.	28.0	9,390,600	65	SPS	3.2	Big Tujunga	USFS
21	May	98.4	4,307,600	285	SPS	10.1	Wildwood	City of Los Angeles/County of Los Angeles
22	Rubio	3.7	24,600	25	SELL	3.1	Lincoln	County of Los Angeles
23	San Dimas	30.0	0	0	SPS	6.1	Webb	City of San Dimas
24	Santa Anita	15.2	3,028,300	95	SPS	5.6	Sawpit	City of Arcadia/City of Monrovia
25	Sawpit	19.1	728,500	42	SPS	3.3	Spinks	City of Monrovia
26	Shields	4.3	0	0	SELL	4.4	Hay	Unincorporated Glendale Area
27	Spinks	21.4	844,600	122	SPS	2.7	Maddock	City of Bradbury
28	Sunset Lower	6.2	206,000	46	SELL/DR	6.7	Aqua Vista	City of Burbank
29	Sunset Upper	11.3	344,000	132	SELL/DR	7.4	Aqua Vista	City of Burbank
30	Webb	12.5	625,000	114	SPS	13.6	Manning Pit	City of Claremont/County of Los Angeles
31	West Ravine	2.7	0	0	SPS	1.0	Lincoln	Unincorporated Altadena Area
32	Wildwood	9.8	59,800	118	SPS	10.1	May	City of Santa Clarita
33	Zachau	17.5	265,300	52	SPS	3.9	Dunsmuir	City of Los Angeles

1 { SPS - Keep as an SPS
DR - Initiate deed restrictions on the parcel
SELL - Sell the property to private interests }

Attachment F06-4d

March 15, 2006

Approved
Diego Cadena

TO: Diego Cadena

FROM: Rod H. Kubomoto
Water Resources Division

3/16

SEDIMENT MANAGEMENT STRATEGIC PLAN
STRATEGY 4 SUMMARY REPORT

Recommendation

Approve the attached Strategy 4 Summary Report for the Sediment Management Strategic Plan.

Discussion

The Strategy 4 Summary Report for the Sediment Management Strategic Plan develops an implementation plan for the Sediment Management Strategic Plan to meet Public Works' sediment management needs for the next 20 years.

Comments from Flood Maintenance, Road Maintenance, and Watershed Management Divisions and the Public Relations Group have been incorporated in this report.

An electronic copy of the Strategy 1, 2, 3, and 4 Summary Reports can be accessed from the Intranet at: http://intranet/wrd/misc/sediment_management.cfm.

JB:yg
P:\wrd\GENERAL\sediment management plan\strategy 4\smsp str 4 fnl rep tm.doc

Attach.

cc: W. H. Higley
Building and Safety (Miller)
Environmental Programs (De La O)
Flood Maintenance (Lee, Daly, Doudar, Quevedo, Romo)
Land Development (Hunter, Burger)
Public Relations Group (Barret)
Road Maintenance (Lehman, Caddick, Diotalevi, Proano, Grindle)
Watershed Management (Pestrella, Ross)
Water Resources (Wood, Burton, Files)

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 4

Develop a Sediment Management Strategic Plan
to meet Public Works' sediment management needs for the next 20 years

March 2006

County of Los Angeles Department of Public Works
Sediment Management Strategic Plan – Strategy 4.1 Report

Table of Contents

Table of Contents (continued)

Appendices

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STRATEGY 4 REPORT - EXECUTIVE SUMMARY

Introduction

Sediment management has become a critical issue at Public Works because we are reaching capacity at our established Sediment Placement Sites (SPSs) but the number of debris retention facilities continues to increase, especially in the Santa Clarita area. Additional challenges include increasingly restrictive environmental regulations and public opposition to hauling through their neighborhoods to access our SPSs. As a result of these issues, a sediment management plan consisting of four strategies has been developed. This report discusses the findings and goals resulting from the work performed under Strategy 4.

Background

In October 2003, Flood Maintenance and Water Resources Divisions were given the MAPP goal of developing a strategy and action plan to address Public Works' sediment management responsibilities at all County maintained roads and for all reservoirs, debris basins, sediment retaining inlets, and SPSs to maintain flood control protection and access for the residents of the Los Angeles County Flood Control District (LACFCD). Administration approved developing a Sediment Management Strategic Plan with oversight from the Steering Committee in order to implement its four strategies:

- Strategy 1: Identifies Public Works' current sediment management practices, issues, and deficiencies. **(Completed)**

- Strategy 2: Identifies Public Works' projected sediment management needs, including anticipated future development within the LACFCD for the next 20 years and recommends follow-up activities to address this issue. **(Completed)**

- Strategy 3: Examines alternatives to meet Public Works' sediment management needs for the next 20 years. **(Completed)**

- Strategy 4: Develops an implementation plan for the Sediment Management Strategic Plan to meet Public Works' sediment management needs for the next 20 years.

This report summarizes the findings and goals from Strategy 4.

The Strategy 4 objective is to develop a Sediment Management Strategic Plan to meet Public Works' sediment management needs for the next 20 years. This objective was accomplished through three Action Steps:

4.1 Develop a Sediment Management Strategic Plan to meet Public Works' needs within the LACFCD.

4.2 Evaluate and update the Sediment Management Strategic Plan every two years and continue implementation.

4.3 Develop an outreach program to keep stakeholders informed of our sediment management efforts and needs.

P:\wrd\GENERAL\sediment management plan\strategy 4\Strategy 4 Master Report Exec Summary.doc

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 4.1

Develop a Sediment Management Strategic Plan to meet Public Works needs within the Los Angeles County Flood Control District

March 2006

4.1.1 Introduction

The Sediment Management Strategic Plan (SMSP) Strategy 4.1 Report brings together all the components of the Strategy 1, 2 and 3 Reports to form an implementation plan to meet Public Works' needs for sediment placement over the next 20 years. To respond to future changes, Action Step 4.2 calls for the SMSP to be evaluated and updated every two years.

Currently, the County of Los Angeles is experiencing increased development, creating high demand for construction materials including sand, aggregate, and sediment for construction fill. Several of the implementation plan priority action items take this into account.

The priority action items have been broken down into three categories as described below. The categories were developed to represent the importance of the task and the role it plays in the development of an effective SMSP. The complete list of the priority action items can be found in Section 4.1.5 of this report. Section 4.1.6 provides an implementation schedule with resource requirements for the action items.

4.1.2 Action Items

There are 11 action items listed in Section 4.1.5 that are critical to the overall success of the plan. Some action items call for the completion of a certain task such as the acquisition of a sediment placement site (SPS), other action items will require a continuous effort from Public Works. A major long-term task will be the coordination with the City of Irwindale and various sand and gravel companies to implement agreements for the placement of our debris control facility sediment in various pits in Irwindale.

Other action items include development of a fee schedule to fund establishment of SPSs in the Santa Clara River Area, preparation of project concept reports for establishing future SPSs, biennial usage of Public Works' existing SPSs, and investigating the feasibility of selling, developing, or using as mitigation credits those SPSs that are anticipated to remain inactive. The background for all these actions is contained in the Strategy 1, 2, and 3 Reports.

4.1.3 Non-Action Items

Also listed in Section 4.1.5 are nonaction items that deal with the continued operation of the existing flood control and drainage systems and are needed to ensure the systems' integrity is maintained.

4.1.4 Future Goals

Also listed in Section 4.1.5 are future goals. Future goals, while important to the overall SMSP, are not critical at the SMSP's outset and can be conducted in the future or in conjunction with other projects. Future goals are broken down by Strategy and Sediment Management Area.

4.1.5 Priority SMSP Action Items

Action Items

1. Continue working relationships with the City of Irwindale, Vulcan Materials Company, United Rock, NU-Way Rock, and Holliday Rock to develop agreements with them for placement of sediment at their various pits located throughout the foothill areas (Strategy 3 Key Goal).

2. Prepare project concept reports for establishing new SPSs in the following areas as discussed in Strategy 3 Report Section 3.2.3 (Strategy 3 Key Goal):

   a. The Santa Clara River area with an approximate total storage capacity of two million cubic yards. Included in this effort is to coordinate with the developer of Tract No. 52833 the establishment of a sediment placement site adjacent to the development.

   b. The Diamond Bar area.

3. For Sediment Management Area I (Santa Monica Mountains), evaluate alternatives to establish a permanent SPSs facility(s), which includes disposal of approximately 120,000 cubic yards of sediment resulting from Public Works' **Road Maintenance** operations during the next 20 years (Strategy 1 Future Goal).

4. Develop a fee schedule to fund establishment of SPSs in the Santa Clara River area to accommodate debris production from new development projects. Also, authorize the workgroup to identify the approval process needed for implementation of a fee schedule (Strategy 2 Key Goal).

5. Create a sediment manager position, similar to that of Public Works' railroad coordinator, who would broker sediment from Public Works' facilities to compatible use entities and coordinate outreach to communities impacted by cleanout operations (Strategy 3 Key Goal). The sediment manager's tasks would include the following:

   a. Prior to cleanout operations, work with various rock quarry operators, nurseries, "dirt brokers", and other end users (see Strategy 3 Report Table 3.5-1) to find alternative placement/uses of the sediment to divert as much material as possible from Public Works' SPSs. Seek to maximize utilization of the Savage Canyon (Whittier), Puente Hills (Industry), and Scholl Canyon (Los Angeles) Landfills, which accept clean fill dirt for free.

b. Develop a program to advertise the existing sediment stored within Public Works' existing SPSs and allow for private individuals to reuse the sediment. Concurrently implement the East Area SPS Capacity Optimization Program as described in Section 3.2.10 of the Strategy 3 Report.

c. Coordinate with Programs Development Division and Public Relations Group to identify and address end users' regulatory issues regarding material from the cleanouts, comply with regulatory requirements for the reuse of sediment in SPSs, and conduct outreach efforts to affected local residents.

d. Coordinate with other divisions to develop an SPS information web page.

e. Initiate a SPS soils testing program to characterize the physical properties of the sediment. This will enable potential users to determine the viability of the sediment for their projects.

6. Study alternatives to reduce the volumes of sediment needed to be placed in SPSs in the Santa Clara River area (Strategy 3 Key Goal). Such a study would consist of the following:

   a. Preparation of a study to explore the feasibility of placing sediment from debris retention facilities in the Santa Clara River area to locations in the structurally modified reaches of the Santa Clara River and its tributaries that are subject to scour from clarified flows due to the lack of in stream stabilization structures. Potential locations to be investigated are identified in Section 3.2.8. The scope of the study would include cost benefit analyses and identification of regulatory requirements and compliance with them.

   b. Evaluation of the sediment transport policy for channels and drains in the Santa Clara River watershed to determine the feasibility and cost benefit of revising drain and channel design standards to allow more sediment transport to the Santa Clara River and its major tributaries, the reaches of which either remain in their natural states or lack in stream stabilization structures.

7. Use all established and active SPSs at least once every two years to maintain Public Works' ability to continue usage of these facilities. If no sediment cleanouts are conducted, the biennial usage should entail removal of sediment to free up storage capacity, but of a scale and duration that does not cause significant traffic, noise, or air quality impacts. Possible uses for the sediment from the SPSs include beach replenishment, beneficial material reuse/resale, or agency requests for fill dirt (i.e. cities, contractors, etc.) (Strategy 3 Key Goal).

8. Water Resources Division to program selection and evaluation of potential SPSs to address deficiencies in the Santa Monica and Santa Susana Mountains Sediment Management Areas resulting from Public Works' **Flood Maintenance** operations (Strategy 2 Key Goal).

9. Under Action Step 4.3, coordinate with Public Works' Public Relations Group to develop an outreach program to address the current issues of community opposition at various SPSs in Sediment Management Areas I, II, and III (Santa Monica Mountains, San Gabriel Mountains, and Santa Susana Mountains, respectively) (Strategy 1 Key Goal) **will be done in Strategy 4.3.**

10. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) the preparation of ultimate fill plans for the ten SPSs that do not have them (Strategy 1 Key Goal).

11. Prepare feasibility studies, cost benefit analyses, and other related investigations needed to provide recommendations on Public Works' inactive SPSs for: 1) sale as surplus property to fund SPS site acquisition in the Santa Clara River and Diamond Bar areas; 2) use of property for mitigation credits; or 3) other purposes as described in Section 3.2.9 of the Strategy 3 Report (Strategy 3 Key Goal).

Non-Action Items (Continue Current Activities)

1. Continue constructing debris basins, debris retaining inlets, and temporary debris control structures as required to mitigate deficiencies and respond to burned watershed conditions to ensure the proper operations of our flood control system. (Action Step 3.1 Goal).

2. Continue the practice of designing road culverts to convey burned and bulked flows from a burned watershed according to our policy on levels of flood protection. (Action Step 3.1 Goal).

3. In Sediment Management Areas I, II, and III, (Santa Monica Mountains, San Gabriel Mountains, and Santa Susana Mountains, respectively), continue to limit, as much as possible, the amount of sediment allowed into the drainage systems downstream where the system is a concrete lined channel or drain (Action Step 3.4 Goal).

Other (Non-Key) Remaining Future Goals

Strategy 1

1. Evaluate the feasibility and cost to obtain permits to reactivate the Malibu Coastal Sediment Placement Site that suspended operations in 1995 due to regulatory agency permit renewal problems (Strategy 1 Future Goal No. 6a).

2. Coordinate with the County Department of Beaches and Harbors to evaluate the feasibility, permit requirements, and cost to use facility sediment for beach sand replenishment purposes (Strategy 1 Future Goal No. 6b).

3. Evaluate the cost and feasibility of establishing new SPS facilities in the Angeles National Forest for Pacoima, Santa Anita, Big Dalton, and San Dimas Reservoirs for Sediment Management Area II in the San Gabriel Mountains, including environmental documents and permits (Strategy 1 Future Goal No. 6c).

4. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) the preparation of Project Concept Reports (PCRs) for the following undersized debris basins: Sullivan Debris Basin, Buena Vista, Carriage House, Dunsmuir, Englewild, Los Flores, Mull, Oliver, Pickens, Pinelawn, Snover, Spinks, Sombrero, Stetson, Turnbull, Upper Rowley, Winery, Bracemar, Chamberlain, Deer, Irving Drive, Linda Vista, and Oakmont View Debris Basins (Strategy 1 Future Goal No. 8).

5. Incorporate into the five-year Flood Fund Budget (Fiscal Years 2006-07 through 2010-11) preparation of the final design plans and construction documents to enlarge the following debris basins: Dry Canyon South Fork, Big Briar, Emerald East, Fieldbrook, Hog, Lincoln, Starfall, Sunnyside, Aliso, Verdugo, and William S. Hart Park Debris Basins (Strategy 1 Future Goal No. 9).

6. Update the Flood Control District's reservoir sediment removal policy. The updated policy will integrate the results from the new hydrology methods and burn policy to determine the reservoir volume that must be maintained to serve its designated flood control and/or debris control functions (Strategy 1 Future Goal No.10).

Strategy 2

None.

Strategy 3

All Sediment Management Areas

1. The research completed for Strategy 3 has not identified any other viable cost effective and permanent method that can be applied on a regional basis to reduce sediment generation in mountain watersheds. However, periodically evaluate new research on regional methods to reduce debris production and continue to evaluate selected debris reduction measures such as revegetation, landscaping, and hillside stabilization in specific areas, especially those hillsides prone to landslides and with high erosion rates affecting road facilities. Specifically, conduct a cost/benefit analysis of vegetating hillsides that produce the most sediment that deposits on road facilities versus the cost of cleaning up the sediment afterwards (Action Step 3.1 Goal).

2. Cooperate and consult with other agencies, including the USFS, in choosing when and where to implement measures to restore vegetation after brush fires.

Currently, USFS's current practice is to allow as much as possible the native chaparral vegetation to reestablish naturally without concerted revegetation efforts (Action Step 3.1 Goal).

Sediment Area I – The Santa Monica Mountains

1. Remove material from Aqua Vista SPS to regain the facility's original 40,800 cubic-yard capacity. Possible uses for the excavated material include beach sand replenishment and adjacent city or private projects in need of fill (Action Step 3.2 Goal).

2. When preparing for future debris retention facility cleanouts, meet with County of Los Angeles Department of Beaches and Harbors to discuss possible use of material as beach replenishment. As an alternative to using Aqua Vista SPS, implement an SPS development fee program for the area to establish SPSs to service future development in the area (Action Step 3.2 Goal).

3. Work with the City of Malibu to obtain permission/procedures necessary for the stockpiling of material at those locations determined by Road Maintenance Division as possible SPSs. If the roadside property is privately held, MPM should begin the acquisition process (Action Step 3.2 Goal).

Sediment Area II – The San Gabriel Mountains

1. Develop and implement an action plan to utilize the center section of Santa Anita SPS, which still has a 3,000,000 cubic-yard capacity. Implementation will require environmental documentation and permit acquisition (Action Step 3.2 Goal).

2. Coordinate with entities interested in undertaking permittee sediment removal operations in Public Works' less remote reservoirs and larger debris basins. Public Works would need to undertake the needed environmental documentation and obtain the necessary regulatory permits before it can issue permits to interested entities. The cost savings associated with no fee material removal by the entities and the conservation of SPS capacity would likely justify the cost of undertaking the needed environmental documentation and permit acquisition. (Action Step 3.2 Goal).

3. Investigate the feasibility of constructing within Big Dalton Wash a rail line that can convey sediment from Dalton SPS and the retired Big Dalton SPS to Manning Pit. The study should look at using Big Dalton Spreading Grounds and Manning Pit, already owned by Public Works, as staging/stockpiling areas (Action Step 3.2 Goal).

Sediment Area III – Santa Susana Mountains

1. Acquire either Strathern or Sheldon Pit as a component of the Sun Valley Project for sediment placement (Action Step 3.2 Goal).

2. Coordinate with Vulcan to excavate Hansen Spreading Grounds in accordance with the approved improvement concept for the facility (Action Step 3.2 Goal).

3. Initiate the process to obtain the necessary authorization to activate Sunset Lower, Sunset Upper, and La Tuna SPSs (Action Step 3.2 Goal).

Sediment Management Area IV – Santa Clara River

None.

Sediment Management Area V – Antelope Valley

None.

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4.1.6 Priority Action Items - Implementation Schedule

				AED	CON	DES	FMD		GMED	ITD	LDD	M&PM	M&PM	PDD	PDD	RMD	SUR	WRD		WMD
Resp Div	PROJECT NAME	PROG CODE	TOTAL BUDGET	ALL GRC	ALL GRC	ALL GRC	ALL NON-EQUIPMENT GRC	EQUIPMENT & OPERATOR RENTAL	ALL GRC	ALL GRC	ALL GRC	ALL NON-OTHER GRC	PROPERTY PURCHASE	ALL NON-CONTRACTS GRC	CONTRACTS	ALL GRC	ALL GRC	ALL NON-CONTRACT GRC	CONTRACTS	ALL GRC
FISCAL YEAR 2006-07																				
WRD	Coordination with Irwindale and Quarries for sediment placement - Phase 1	F010	Funded in WRD Div Budget																	
WRD	PCR Development for Santa Clarita & Diamond Bar SPSs - Phase 1	F010	48,000															48,000		
WRD	Sedimant Manager sediment disposition outreach/advertising - Phase 1	F010	12,000															12,000		
WRD	Fee schedule development to fund establishment of Santa Clara River SPSs. Phase 1	F010	24,000															24,000		
WRD	Alternatives study for inactive SPS: sell, sediment cleanout, mitigation bank - Phase 1	F010	12,000															12,000		
WRD	Santa Clara River Region debris reduction analysis: sediment placement in river & sluicing - Phase 1	F010	34,000															34,000		
RMD	Santa Monica Mountains establishment of Sediment Stockpile sites RMD-Phase 1	R218	235,000	8,000		12,000			6,000			25,000		30,000	100,000	44,000	10,000			
FY 2006-07 subtotals - Flood			$ 130,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 130,000	$ -	$ -
FY 2006-07 subtotals - Road			$ 235,000	$ 8,000	$ -	$ 12,000	$ -	$ -	$ 6,000	$ -	$ -	$ 25,000	$ -	$ 30,000	$ 100,000	$ 44,000	$ 10,000	$ -	$ -	$ -

Attachment F06-4d

4.1.6 Priority Action Items - Implementation Schedule																				
				AED	CON	DES	FMD		GMED	ITD	LDD	M&PM	M&PM	PDD	PDD	RMD	SUR	WRD		WMD
Resp Div	PROJECT NAME	PROG CODE	TOTAL BUDGET	ALL GRC	ALL GRC	ALL GRC	ALL NON-EQUIPMENT GRC	EQUIPMENT & OPERATOR RENTAL	ALL GRC	ALL GRC	ALL GRC	ALL NON-OTHER GRC	PROPERTY PURCHASE	ALL NON-CONTRACTS GRC	CONTRACTS	ALL GRC	ALL GRC	ALL NON-CONTRACT GRC	CONTRACTS	ALL GRC
FISCAL YEAR 2007-08																				
WRD	Coordination with Irwindale and Quarries for sediment placement - Phase 2	F010	Funded in WRD Div Budget																	
WRD	PCR Development for Santa Clarita & Diamond Bar SPSs - Phase 2	F010	73,000				24,000					25,000						24,000		
WRD	Santa Clara River Region debris reduction analysis: sediment placement in river & sluicing - Phase 2	F010	160,000			24,000	20,000		24,000					10,000	50,000			32,000		
WRD	Fee schedule development to fund establishment of Santa Clara River SPSs, Phase 2	F010	95,000				36,000				24,000							35,000		
WRD	Preparation of Ultimate Fill Plans for 11 SPSs - Phase 1	F010	50,000														30,000	20,000		
WRD	Alternatives study for inactive SPS: sell, sediment cleanout, mitigation bank - Phase 2	F010	75,000				30,000					25,000						20,000		
FMD	Sediment Manager sediment disposition outreach/advertising - Phase 2	F010	66,000				24,000		20,000	10,000								12,000		
FMD	Facilitate permittee clean-outs of reservoirs and debris basins, obtain necessary permits, provide limited equipment support. Phase 1	F010	417,000		20,000	10,000	35,000	175,000	20,000					24,000	100,000			33,000		
WRD	PCR Development for Santa Susana and Santa Monica Mountain area Bar SPSs - Phase 1	F010	23,000				13,000											10,000		
RMD	Santa Monica Mountains establishment of Sediment Stockpile sites RMD - Phase 2	R218	2,098,000			12,000			6,000			35,000	2,000,000	12,000		33,000				
	Fy 2007-08 subtotals - Flood		$ 959,000	$ -	$ 20,000	$ 34,000	$ 182,000	$ 175,000	$ 64,000	$ 10,000	$ 24,000	$ 50,000	$ -	$ 34,000	$ 150,000	$ -	$ 30,000	$ 186,000	$ -	$ -
	Fy 2007-08 subtotals - Road		$ 2,098,000	$ -	$ -	$ 12,000	$ -	$ -	$ 6,000	$ -	$ -	$ 35,000	$ 2,000,000	$ 12,000	$ -	$ 33,000	$ -	$ -	$ -	$ -

4.1.6 Priority Action Items - Implementation Schedule

Resp Div	PROJECT NAME	PROG CODE	TOTAL BUDGET	AED ALL GRC	CON ALL GRC	DES ALL GRC	FMD ALL NON-EQUIPMENT GRC	FMD EQUIPMENT & OPERATOR RENTAL	GMED ALL GRC	ITD ALL GRC	LDD ALL GRC	M&PM ALL NON-OTHER GRC	M&PM PROPERTY PURCHASE	PDD ALL NON-CONTRACTS GRC	PDD CONTRACTS	RMD ALL GRC	SUR ALL GRC	WRD ALL NON-CONTRACT GRC	WRD CONTRACTS	WMD ALL GRC
FISCAL YEAR 2008-09																				
WRD	Coordination with Irwindale and Quarries for sediment placement - Phase 3	F010	Funded in WRD Div Budget																	
WRD	PCR Development for Santa Clarita & Diamond Bar SPSs - Phase 3	F010	220,000	8,000		15,000	24,000					15,000		24,000	100,000		10,000	24,000		
WRD	Preparation of Ultimate Fill Plans for 11 SPSs - Phase 2	F010	40,000														20,000	20,000		
WRD	PCR Development for Santa Susana and Santa Monica Mountain area Bar SPSs - Phase 2	F010	55,000				20,000					15,000						20,000		
WRD	Coordinate with B&H to determine feasibility of using sediment for beach replenishment - Phase 1	F010	22,000				6,000		10,000									6,000		
FMD	Coordinate a permittee clean-out of Aqua Vista SPS - Phase 1	F010	105,000		15,000	20,000	25,000	25,000						5,000				15,000		
FMD	Coordinate with the City of Malibu to determine options for stockpiling material along roadways throughout the City	F010	41,000				13,000					15,000						13,000		
FMD	Sediment Manager sediment disposition outreach - Phase 3	F010	56,000				18,000		20,000									18,000		
WRD	Implement a plan to utilize the center section of Santa Anita SPS	F010	105,000				25,000		10,000					10,000	20,000		15,000	25,000		
FMD	Facilitate permittee clean-outs of reservoirs and debris basins, obtain necessary permits, provide limited equipment support, Phase 2	F010	385,000		15,000	15,000	40,000	175,000	20,000					5,000	75,000			40,000		
RMD	Santa Monica Mountains establishment of Sediment Stockpile sites RMD - Phase 3	R218	2,055,000									10,000	2,000,000	12,000		33,000				
	Fy 2008-09 subtotals - Flood		$ 1,029,000	$ 8,000	$ 30,000	$ 50,000	$ 171,000	$ 200,000	$ 60,000	$ -	$ -	$ 45,000	$ -	$ 44,000	$ 195,000	$ -	$ 45,000	$ 181,000	$ -	$ -
	Fy 2008-09 subtotals - Road		$ 2,055,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ 2,000,000	$ 12,000	$ -	$ 33,000	$ -	$ -	$ -	$ -

4.1.6 Priority Action Items - Implementation Schedule																				
				AED	CON	DES	FMD		GMED	ITD	LDD	M&PM	M&PM	PDD	PDD	RMD	SUR	WRD		WMD
Resp Div	PROJECT NAME	PROG CODE	TOTAL BUDGET	ALL GRC	ALL GRC	ALL GRC	ALL NON-EQUIPMENT GRC	EQUIPMENT & OPERATOR RENTAL	ALL GRC	ALL GRC	ALL GRC	ALL NON-OTHER GRC	PROPERTY PURCHASE	ALL NON-CONTRACTS GRC	CONTRACTS	ALL GRC	ALL GRC	ALL NON-CONTRACT GRC	CONTRACTS	ALL GRC
FISCAL YEAR 2009-10																				
WRD	Coordination with Irwindale and Quarries for sediment placement - Phase 4	F010	Funded in WRD Div Budget																	
WRD	Determine the feasibility of constructing a rail line within Big Dalton Wash to carry sediment from the Glendora area to Manning Pit	F010	42,000			10,000	10,000		6,000			6,000						10,000		
WRD	PCR Development for Santa Susana and Santa Monica Mountain area Bar SPSs - Phase 3	F010	55,000				20,000					15,000						20,000		
WRD	Evaluate the feasibility and cost of reactivating Malibu Coastal SPS	F010	137,000				25,000		10,000					12,000	50,000			25,000		15,000
WRD	Begin the processes to activate 3 unutilized SPS's	F010	140,000			25,000	15,000					10,000					15,000	75,000		
FMD	Facilitate permittee clean-outs of reservoirs and debris basins, obtain necessary permits, provide limited equipment support. Phase 3	F010	370,000		15,000	15,000	40,000	175,000	20,000					15,000	50,000			40,000		
WRD	Continue coordination with B&H for clean-outs of facilities adjacent to the beach areas and establish a development fee program for future Santa Monica Mountains Area SPSs.	F010	43,000				13,000		10,000					7,000				13,000		
FMD	Coordinate a permittee clean-out of Aqua Vista SPS - Phase 2	F010	85,000		10,000		25,000	25,000									10,000	15,000		
FMD	Sediment Manager sediment disposition outreach - Phase 4	F010	36,000				18,000											18,000		
WRD	Acquire either Strathern or Sheldon Pit as a SPS and component for the Sun Valley Project	F010	30,000				15,000											15,000		
WRD	Preparation of Ultimate Fill Plans for 11 SPSs - Phase 3	F010	30,000														10,000	20,000		
	FY 2009-10 subtotals - Flood		$ 968,000	$ -	$ 25,000	$ 50,000	$ 181,000	$ 200,000	$ 46,000	$ -	$ -	$ 31,000	$ -	$ 34,000	$ 100,000	$ -	$ 35,000	$ 251,000	$ -	$ 15,000
	Fy 2009-10 subtotals - Road		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

4.1.6 Priority Action Items - Implementation Schedule

Resp Div	PROJECT NAME	PROG CODE	TOTAL BUDGET	AED	CON	DES	FMD		GMED	ITD	LDD	M&PM	M&PM	PDD	PDD	RMD	SUR	WRD		WMD
				ALL GRC	ALL GRC	ALL GRC	ALL NON-EQUIPMENT GRC	EQUIPMENT & OPERATOR RENTAL	ALL GRC	ALL GRC	ALL GRC	ALL NON-OTHER GRC	PROPERTY PURCHASE	ALL NON-CONTRACTS GRC	CONTRACTS	ALL GRC	ALL GRC	ALL NON-CONTRACT GRC	CONTRACTS	ALL GRC
FISCAL YEAR 2010-11																				
WRD	Coordination with Irwindale and Quarries for sediment placement - Phase 5	F010	Funded in WRD Div Budget																	
WRD	Coordinate with Vulcan in the excavation of Hansen Spreading Grounds	F010	40,000				10,000		10,000			10,000						10,000		
FMD	Facilitate permittee clean-outs of reservoirs and debris basins, obtain necessary permits, provide limited equipment support. Phase 4	F010	410,000		15,000	15,000	40,000	175,000	20,000					5,000				40,000	100,000	
WRD	Determine feasibility of establishing new SPS's in the Angeles National Forest	F010	35,000				15,000		5,000									15,000		
WRD	Commence preparation of PCR's for 23 undersized debris basins	F010	130,000				15,000					15,000						100,000		
WRD	Prepare construction plans & documents for 11 debris basin enlargement projects	F024	100,000		5,000	60,000	10,000		5,000			5,000		5,000				10,000		
WRD	Update the Department's Reservoir Sediment Removal Policy	F010	45,000				10,000											35,000		
FMD	Sediment Manager sediment disposition outreach - Phase 5	F010	34,000				18,000		10,000									6,000		
WRD	Coordinate with USFS to best revegetate watersheds after fires	F010	25,000				10,000											15,000		
WRD	Investigate and compare costs for vegetating hillsides versus clean-up of the material from roadways	F010	25,000													10,000		10,000		5,000
	FY 2010-11 subtotals - Flood		$ 844,000	$ -	$ 20,000	$ 75,000	$ 128,000	$ 175,000	$ 50,000	$ -	$ -	$ 30,000	$ -	$ 10,000	$ -	$ 10,000	$ -	$ 241,000	$ 100,000	$ 5,000
	Fy 2010-11 subtotals - Road		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Attachment F06-4d

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 4.2
Biennial Evaluation and Update of the Sediment Management Strategic Plan

March 2006

The next evaluation and update of the Sediment Management Strategic Plan will be undertaken in 2008.

COUNTY OF LOS ANGELES
SEDIMENT MANAGEMENT STRATEGIC PLAN

STRATEGY 4.3

Develop an Outreach Program to Keep Stakeholders Informed

March 2006

4.3.1 Introduction

Strategy 4.3 of the Sediment Management Strategic Plan develops a stakeholder outreach program to inform the public about sediment hauling to and from Public Works' facilities. This includes the local agency notification guidelines, public notification brochure templates, press release guidelines, public information and sediment user web page outline, and streamline instruments to address the public's concerns during sediment hauling. With an always changing weather pattern, sediment hauling work in response to the fire-flood sequence, increased hillside development, and a inconsistent sediment market, it will be necessary to keep interested parties and the general public informed of Public Works' sediment management practices.

4.3.2 General Information Dissemination

The most important component in any outreach program is to have up to date, accurate information. This information is necessary to provide advance notice to the public regarding sediment hauling operations and why they are necessary for the proper operation of the flood control system. The information will also be utilized by parties interested in obtaining material to provide them with quantities, material qualities, and city haul route requirements. A Public Works sediment management website will provide a detailed tracking system of pending debris basin cleanouts and SPS fill activities. The information will also assist Public Works staff in their sediment management operations. A sample web page for the sediment users is contained in Appendix A. (Note: The information on this sample web page is not accurate. It is for demonstration purposes only.) Also included in Appendix A is a preliminary outline for the web page development.

The Public Works Sediment Management Website will provide:

- Information on the flood control system and the critical public safety need for sediment removal from the system's facilities.
- Public Works' goal to maximize reuse sediment from debris retaining facilities in lieu of placement in SPSs.
- The debris basins and SPSs in which there is sediment available for removal by permittee.
- Contact information for appropriate Public Works personnel.
- Scheduled sediment hauling work.

This information will make sediment reuse by any company, group, or individual more effective. Updating the information on the website will be conducted by office staff at the corresponding maintenance yard so that information is accurate and up to date. Editing privileges will only be permitted by authorized staff via a password.

4.3.3 Year Round Search for Partners in Sediment Management

As part of the outreach program, the Sediment Manager, which was recommended in Action Step 3.2, would work year-round with the foremen and superintendents of the various flood and road yards and the local sediment user stakeholders, making connections, and gathering information on projects/needs for sediment. It has been Public Works' accepted practice to look for individuals or companies seeking material when a cleanout is imminent. The Sediment Manager will expand upon these coordination efforts with local sediment interests to ensure that the maximum amount of material is diverted from the SPSs and utilized for beneficial reuse, thus increasing Public Works' local sediment placement capacity for emergency situations.

Besides the traditional debris basin cleanout of material during storm season when a basin reaches 25 percent of its capacity (5 percent if in a burned watershed), Public Works will also work with the various quarry operators, nurseries, and landscape contractors to conduct cleanouts of SPSs in the off-season, thus increasing capacity in these facilities for future debris basin cleanouts. These off-season SPS cleanouts would require close working relationships with local officials and residents where a cleanout is proposed. Some cleanouts may require the assistance of Programs Development Division's City Services staff to coordinate the necessary local approvals/permits for hauling.

4.3.4 Advertise Available Sediment

Advertising Public Works' available sediment at Los Angeles area construction trade shows, construction-related magazines, aggregate industry trade shows, and aggregate-related magazines will increase the visibility of Public Works' sediment amongst the key industries with the greatest potential for utilizing the sediment. The costs associated with the advertising would be minimal compared to the potential increase in debris basin and SPS capacity.

If the aforementioned material is advertised, Public Works must be able to deliver that advertised product. Acquisition of the necessary permits and any other regulatory requirements must be obtained in advance or a method to quickly obtain the aforementioned items must be in place.

4.3.5 Public Notification of Sediment Haul Routes

When Public Works conducts cleanouts, there is a process involved in notifying the local authorities and residents. When a facility requires a cleanout, staff at the Flood Maintenance yard responsible for that facility will first prepare a preliminary haul route. Based on the preliminary haul route, any affected cities will be contacted to obtain concurrence on the proposed haul route. Every attempt will be made to accommodate any reasonable modification to the haul route city representatives may have.

Once a haul route is finalized, Flood Maintenance Division (FMD) staff prepares a flyer which details the need for the cleanout and provides a map depicting the haul route. The flyer also provides information on the dates work is expected to be carried out, work hours, and contact information for further questions. Prior to distribution of the flyers, a cursory review by Public Relations Group (PRG) is suggested. The flyer should also be forwarded to the affected Supervisor's office so that its staff can respond to questions from the public. FMD staff can then proceed to distribute the flyers at every residence/business along the haul route at least three days before any hauling begins. A sample haul route flyer is provided in Appendix B. If the haul route is in the vicinity of a school, staff will contact the school's administrators to notify them of the haul route and possible traffic concerns so that arrangements can be made to minimize the impact to the school, students, and parents. Staff will also notify its own truck drivers of the possible before- and after-school traffic and the need to drive safely through the school zone.

Up-to-date progress reports of the sediment cleanout can be posted on the website mentioned in Section 4.3.2. The website address can be included in the flyers allowing residents to keep track of the progress of work as well as the anticipated completion date.

In some instances, cities have requested Public Works to issue a press release in the local papers and/or address the city council to further inform the general public of the upcoming work. Press releases for Public Works are issued through PRG. A press release may require notice beyond the three days offered with the flyers such as in cases were the local paper only goes to press once a week. FMD staff will need to work closely with PRG to ensure that the release provides all the relevant information. A sample of a previous press release is shown in Appendix C. If addressing a City Council becomes necessary, the task would be performed by the Area Engineer for maintenance cleanouts or by the project manager for nonmaintenance cleanouts.

4.3.6 Addressing Community/Residents' Concerns

Having conducted many cleanouts, Public Works' staff has found that the primary complaint of residents is the trucks on their local streets. The residents complain of the attendant noise, dust, and traffic impacts. While Public Works makes every attempt to minimize impacts to the residents, some level of impact from the work is unavoidable. One measure used by FMD in the past to foster good relations with the local residents was the provision of car wash coupons, paid for at Public Works' expense, to the residents impacted by FMD's cleanouts. The coupons would be given to residents at the discretion of the superintendent. It is recommended this measure become a standard contingency for all cleanouts. Each Flood and Road Maintenance field yard and other cleanout project managers in Public Works should include in their annual budgets funds to purchase car wash tickets.

4.3.7 Public Meetings

Based on discussions with representatives from local cities such as Arcadia, Glendale, Burbank, San Dimas, Claremont, and others, there has not been a perceived need to have presediment hauling meetings with local residents. Staff should continue to dialogue with the local City representatives to validate that the current practice of issuing press releases and disseminating notification brochures to residents along the haul route prior to the start of the sediment hauling work is adequate for the proposed hauling work. It should be noted City staff may believe meetings with local residents would be needed for large scale or frequent cleanouts, which are likely to occur in the wake of a major fire or storm event. The decision whether or not to hold community meetings will be deferred to the City.

4.3.8 Conclusion

A fully comprehensive outreach plan targeting the construction and aggregate industries and the general public would do much to expand Public Works' possibilities in beneficial reuse of sediment generated at its various facilities. Reducing the red tape permittees face when attempting to reuse sediment will benefit our operations.

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APPENDIX A

Preliminary Web Page and Development Outline

The following is a screen capture of a preliminary sediment tracking website with links for further information.

Los Angeles County Department of Public Works Sediment Management Strategic Plan Sediment Track - Microsoft Inter...

File Edit View Favorites Tools Help

Search Favorites Media

Address C:\Sediment Management\web page\sediment tracker.htm Go

Los Angeles County Department of Public Works
Sediment Management Strategic Plan
Sediment Tracking Website

Sediment Placement Sites

Facility Name	Status	Current Capacity		Material Qualities	Contact
Aqua Vista	ACTIVE	View	Edit		Ken Rickard (818)896-0594
Auburn	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
Bailey	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
Big Dalton	FULL	View	Edit		Ed Zargarian (626)445-7630
Big Tujunga	ACTIVE	View	Edit		Ken Rickard (818)896-0594
Browns	ACTIVE	View	Edit		Ken Rickard (818)896-0594
Burro	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Cogswell	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Dalton	FULL	View	Edit		Ed Zargarian (626)445-7630
Dunsmuir	ACTIVE	View	Edit		Ken Rickard (818)896-0594
Eagle	INACTIVE	View	Edit		Ken Rickard (818)896-0594
Eaton	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
Hastings	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Hay	ACTIVE	View	Edit		Ken Rickard (818)896-0594
La Tuna	INACTIVE	View	Edit		Ken Rickard (818)896-0594
Las Flores	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
Lincoln	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Live Oak	INACTIVE	View	Edit	5-10-2004 Analysis	Ed Zargarian (626)445-7630
Maddock	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Manning Pit	ACTIVE	View	Edit		Ed Zargarian (626)445-7630
Maple Canyon	ACTIVE	View	Edit		Ken Rickard (818)896-0594
May	ACTIVE	View	Edit		Ken Rickard (818)896-0594
Puddingstone Diversion	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
Rubio	INACTIVE	View	Edit		Ed Zargarian (626)445-7630
San Dimas	FULL	View	Edit		Ed Zargarian (626)445-7630
Santa Anita	ACTIVE	View	Edit		Ed Zargarian (626)445-7630

Sediment Management Plan
Web Page Development Outline

- Main Page - Welcome to the LA County Dept. of Public Works Sediment Management Website
- Link A - "Why We Move Dirt" brief summary of need to keep storage capacity at debris basins
  - Sublink A1 - History of Flood Control System
  - Sublink A2 - How Debris Basins Ensure Public Safety
  - Sublink A3 - An efficient flood control system provides for a stable economy and stable employment
  - Sublink A4 - Concrete lined channels convey storm flows away from property
- Link B - "Erosion and Sedimentation" brief summary/synopsis of mechanics of erosion
  - Sublink B1 - Fire/flood sequence compounds the problem
  - Sublink B2 - Debris production during intense storms (photos, possible video, etc.)
- Link C - "Why not just let mother nature take over and have the rivers carry the sediment?"
- Link D - "LA County Maintenance Operations - Getting Ready for Future Storms"
- Link E - "The Flood Control System's Operation and Maintenance"
  - Sublink E1 - Debris Basin (description, purpose, photos, etc.)
  - Sublink E2 - Reservoirs (description, purpose, photos, etc.)
  - Sublink E3 - Sediment Placement Sites (description, purpose, photos, etc.)
    - Sublink E123a - Typical maintenance needs for each facility
    - Sublink E123b - Annual vegetation removal
    - Sublink E123c - Where do we take removed sediment
  - Sublink E4 - Maximizing Capacity at our SPS's
    - Sublink E4a - Sediment Management Strategic Plan
    - Sublink E4b - Biannual SPSs Clean-out Program
    - Sublink E4b - Permittee Clean-outs

APPENDIX B

Sample Haul Route Hand Out

Sample Haul Route Hand Out

The following flyer was prepared for the clean-out of Engelwild Debris Basin in February 2005. The following two pages are copied onto each side of a standard sheet of paper and folded in half to produce the flyer which is delivered to each residence/business along the haul route by Flood Maintenance personnel.

Los Angeles County

Department of Public Works

Debris Basins

Sediment Removal Haul Routes

FRONT COVER

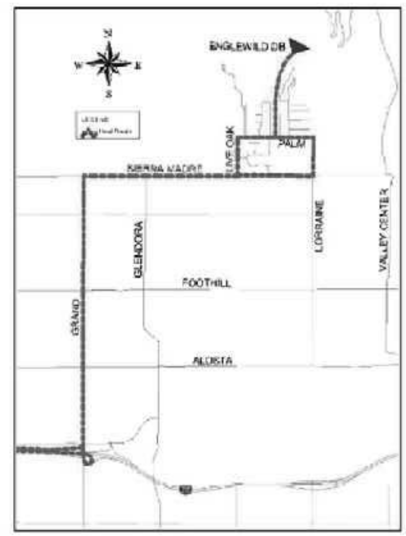
<u>SEDIMENT REMOVAL HAUL ROUTES</u>

In an effort to provide flood protection to your community from the hillsides burned by the Williams Fire and the recent storms, it is necessary to clean out the sediments captured in the debris basin. The Los Angeles County Department of Public Works operates and maintains these facilities to provide flood and debris protection during major storm events after fires. This debris hauling work will be conducted on an as needed basis to insure that adequate capacity exists for future storms. The intensity of this year's storms will affect the rate of sediment deposition in these facilities and time duration of future sediment hauling work.

The as needed sediment hauling work will occur from 7:30 a.m. to 5:00 p.m. and will create certain unavoidable inconveniences. These may include noise and truck traffic as sediment is transported to the Sediment Placement Sites in nearby Cities.

Equipment, such as water trucks and sweepers may be used along the haul route to reduce and control the dust as necessary. We understand the hardship you will experience during our operation and we will attempt to reduce all impacts on you as much as possible. We appreciate your cooperation with our efforts to provide flood control protection to your community during this storm season.

If you have any further questions, please contact the Glendora Public Works Department at (626)914-8246. Otherwise please contact Jose Quevedo or Ed Zargarian of the Los Angeles County Department of Public Works at (626) 445-7630.



WHEN OPENED

APPENDIX C

Sample Press Release

Aug. 11, 2005

NEWS -- Office of Supervisor Michael D. Antonovich

CONTACT: Ken Pellman, County of Los Angeles Department of Public Works – (626) 458-4094
For Immediate Release:

COUNTY PREPARING FOR WINTER STORMS

County of Los Angeles Supervisor Michael D. Antonovich is partnering with the City of Sierra Madre to advise residents of work in the area that is part of the County's ongoing flood control efforts. The County Department of Public Works uses the dry months of each year to perform heavy maintenance and preparation work throughout the County's extensive flood control and water conservation system.

Beginning Monday, August 15, Public Works crews will begin work to remove organic erosion debris such as dirt, rocks, and vegetation from behind Sierra Madre Dam at the northeastern edge of the City of Sierra Madre. The debris will be trucked to a placement site near the northeastern border of Pasadena from Sierra Madre via Sumac Trail, Orange Drive, Canyon Crest Drive, Churchill Road, Mountain Trail Avenue, Sierra Madre Boulevard, and Sierra Madre Villa. Crews will work between 7:00 a.m. and 5:00 p.m. Monday through Friday. In addition to trucks hauling the debris, vehicles such as water trucks and sweepers may be used along the route to reduce and control dust. Public Works expects to complete the project in three weeks or less.

Supervisor Antonovich has stressed the importance of removing debris from reservoirs behind County dams, which will help keep the County's flood control and water conservation system in optimum working condition for the next season of storms. The County's flood control and water conservation system protects lives and property while conserving some stormwater for later use.

5-SierraMadreDam05KA

APPENDIX D

Implementation Plan

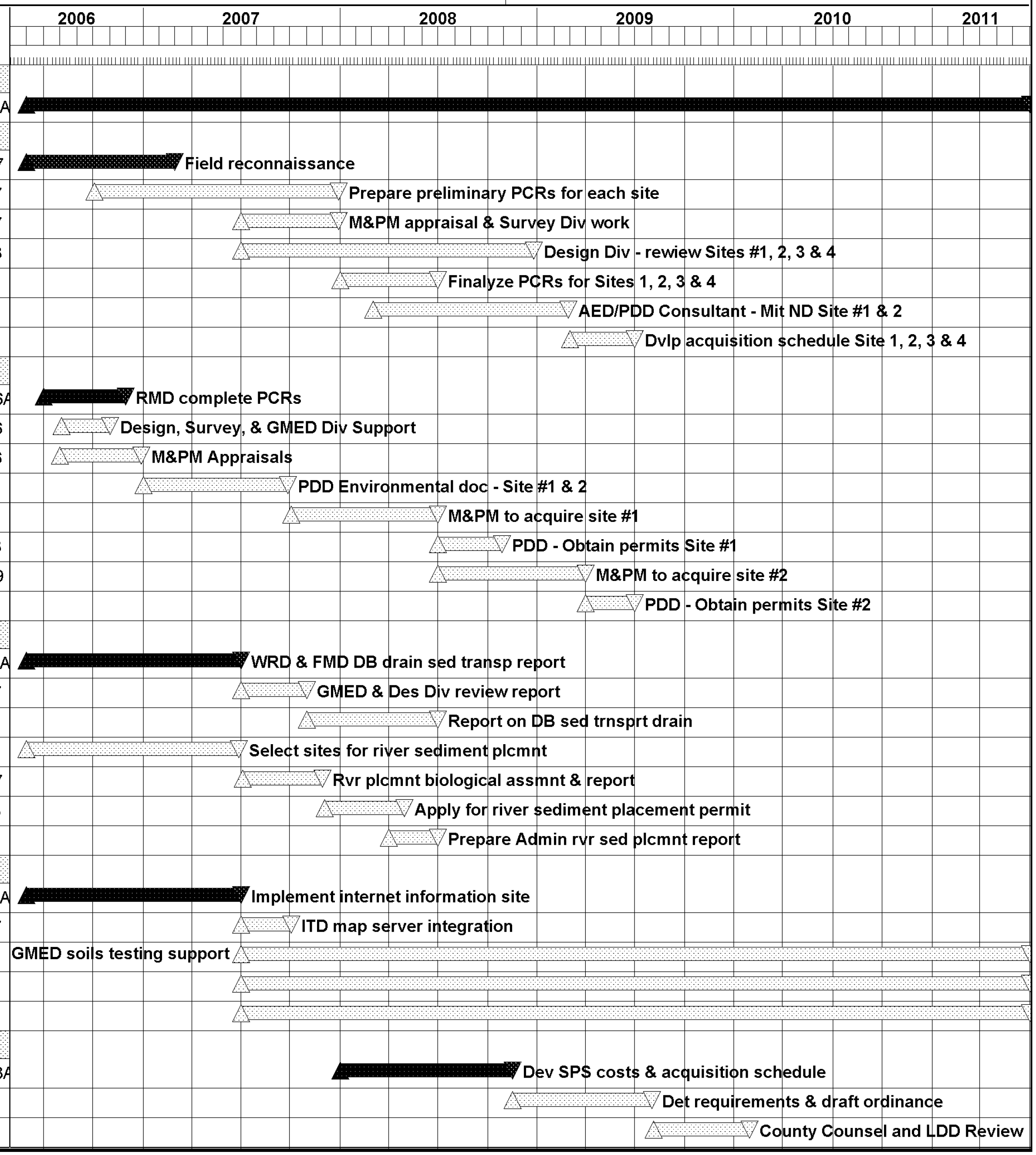
Attachment F06-4d

Los Angeles County Department of Public Works:
Water Resources and Flood Maintenance Divisions

IMPLEMENTATION PLAN FOR SEDIMENT MANAGEMENT STATEGIC PLAN

UPDATED 04/24/06
Sheet 1 of 4

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
Irwindale Quarry Coordination				
11	Coordinate a/r with City and Quarry	0	01JUN06A	30JUN11A
PCRs for Santa Clara Rvr & Diamond Bar SPSs				
21	Field reconnaissance	1,045	01JUN06A	01MAR07
22	Prepare preliminary PCRs for each site	258	04OCT06	27DEC07
23	M&PM appraisal & Survey Div work	104	02JUL07	27DEC07
24	Design Div - rewiew Sites #1, 2, 3 & 4	312	02JUL07	25DEC08
25	Finalyze PCRs for Sites 1, 2, 3 & 4	104	01JAN08	30JUN08
26	AED/PDD Consultant - Mit ND Site #1 & 2	208	03MAR08	26FEB09
27	Dvlp acquisition schedule Site 1, 2, 3 & 4	70	02MAR09	30JUN09
Santa Monica Mtns RMD SPS				
31	RMD complete PCRs	34	01JUL06A	30NOV06A
32	Design, Survey, & GMED Div Support	52	03AUG06	01NOV06
33	M&PM Appraisals	87	01AUG06	28DEC06
34	PDD Environmental doc - Site #1 & 2	156	01JAN07	27SEP07
35	M&PM to acquire site #1	155	03OCT07	30JUN08
36	PDD - Obtain permits Site #1	68	01JUL08	27OCT08
37	M&PM to acquire site #2	156	01JUL08	30MAR09
38	PDD - Obtain permits Site #2	52	01APR09	30JUN09
SCR - River sediment plcmnt & sed trnsprt altrns				
41	WRD & FMD DB drain sed transp report	0	01JUN06A	30JUN07A
42	GMED & Des Div review report	71	02JUL07	31OCT07
43	Report on DB sed trnsprt drain	138	01NOV07	30JUN08
44	Select sites for river sediment plcmnt	225	01JUN06	28JUN07
45	Rvr plcmnt biological assmnt & report	86	04JUL07	29NOV07
46	Apply for river sediment placement permit	85	03DEC07	28APR08
47	Prepare Admin rvr sed plcmnt report	52	01APR08	30JUN08
Sediment Manager Outreach Activities				
51	Implement internet information site	35	01JUN06A	30JUN07A
52	ITD map server integration	53	02JUL07	01OCT07
53	GMED soils testing support	836	02JUL07	30JUN11
54	Website ongoing support & outreach	836	02JUL07	30JUN11
55	East Area SPS Capacity Optimization Prgrm	836	02JUL07	30JUN11
SPS Fee Schedule Development				
61	Dev SPS costs & acquisition schedule	0	01JAN08A	15NOV08A
62	Det requirements & draft ordinance	148	17NOV08	30JUL09
63	County Counsel and LDD Review	104	03AUG09	28JAN10



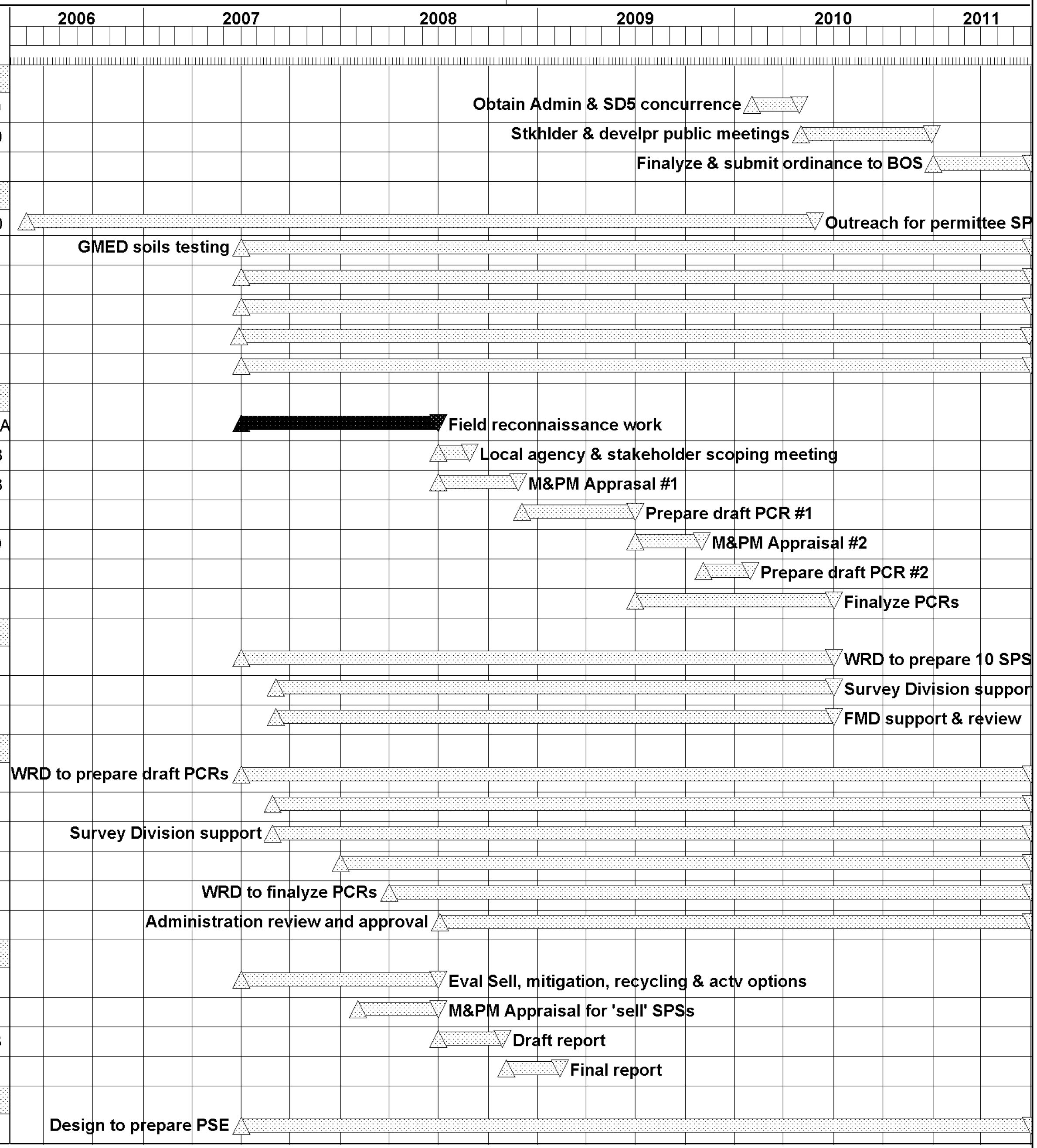
Attachment F06-4d

Los Angeles County Department of Public Works:
Water Resources and Flood Maintenance Divisions

IMPLEMENTATION PLAN FOR SEDIMENT MANAGEMENT STATEGIC PLAN

UPDATED 04/24/06

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
SPS Fee Schedule Development				
64	Obtain Admin & SD5 concurrence	52	01FEB10	29APR10
65	Stkhlder & develpr public meetings	140	03MAY10	30DEC10
66	Finalyze & submit ordinance to BOS	104	03JAN11	30JUN11
Facilitate Permittee Cleanout				
71	Outreach for permittee SPS cleanouts	833	01JUN06	27MAY10
72	GMED soils testing	836	02JUL07	30JUN11
73	Design Division support - cut plans	836	02JUL07	30JUN11
74	PDD environmental support A/R	836	02JUL07	30JUN11
75	Construction Division permit support	836	28JUN07	29JUN11
76	FMD truck loading support as negotiated	836	02JUL07	30JUN11
SM & SS Mtns SPSs PCRs - Fld ('SM&SSM S')				
81	Field reconnaissance work	104	02JUL07A	30JUN08A
82	Local agency & stakeholder scoping meeting	33	01JUL08	26AUG08
83	M&PM Apprasal #1	85	01JUL08	25NOV08
84	Prepare draft PCR #1	122	01DEC08	30JUN09
85	M&PM Appraisal #2	70	01JUL09	29OCT09
86	Prepare draft PCR #2	52	02NOV09	28JAN10
87	Finalyze PCRs	209	01JUL09	30JUN10
SPS Ultimate Fill Plan Preparation				
91	WRD to prepare 10 SPS ultimate fill plans	627	02JUL07	30JUN10
92	Survey Division support as required	591	03SEP07	30JUN10
93	FMD support & review	591	03SEP07	30JUN10
Prepare PCR's for 23 deficient Debris Basins				
101	WRD to prepare draft PCRs	836	02JUL07	30JUN11
102	M&PM R/W support - as required	801	30AUG07	30JUN11
103	Survey Division support	801	30AUG07	30JUN11
104	GMED, DES, FMD, PDD & City revw of PCRs	731	01JAN08	30JUN11
105	WRD to finalyze PCRs	679	01APR08	30JUN11
106	Administration review and approval	626	02JUL08	30JUN11
Inactive SPSs Alternatives Study ('I SPS AS')				
111	Eval Sell, mitigation, recycling & actv options	209	02JUL07	30JUN08
112	M&PM Appraisal for 'sell' SPSs	85	04FEB08	30JUN08
113	Draft report	69	01JUL08	28OCT08
114	Final report	59	03NOV08	11FEB09
Prepare Construction P&S for 11 DB enlrgmnt proj				
121	Design to prepare PSE	836	02JUL07	30JUN11



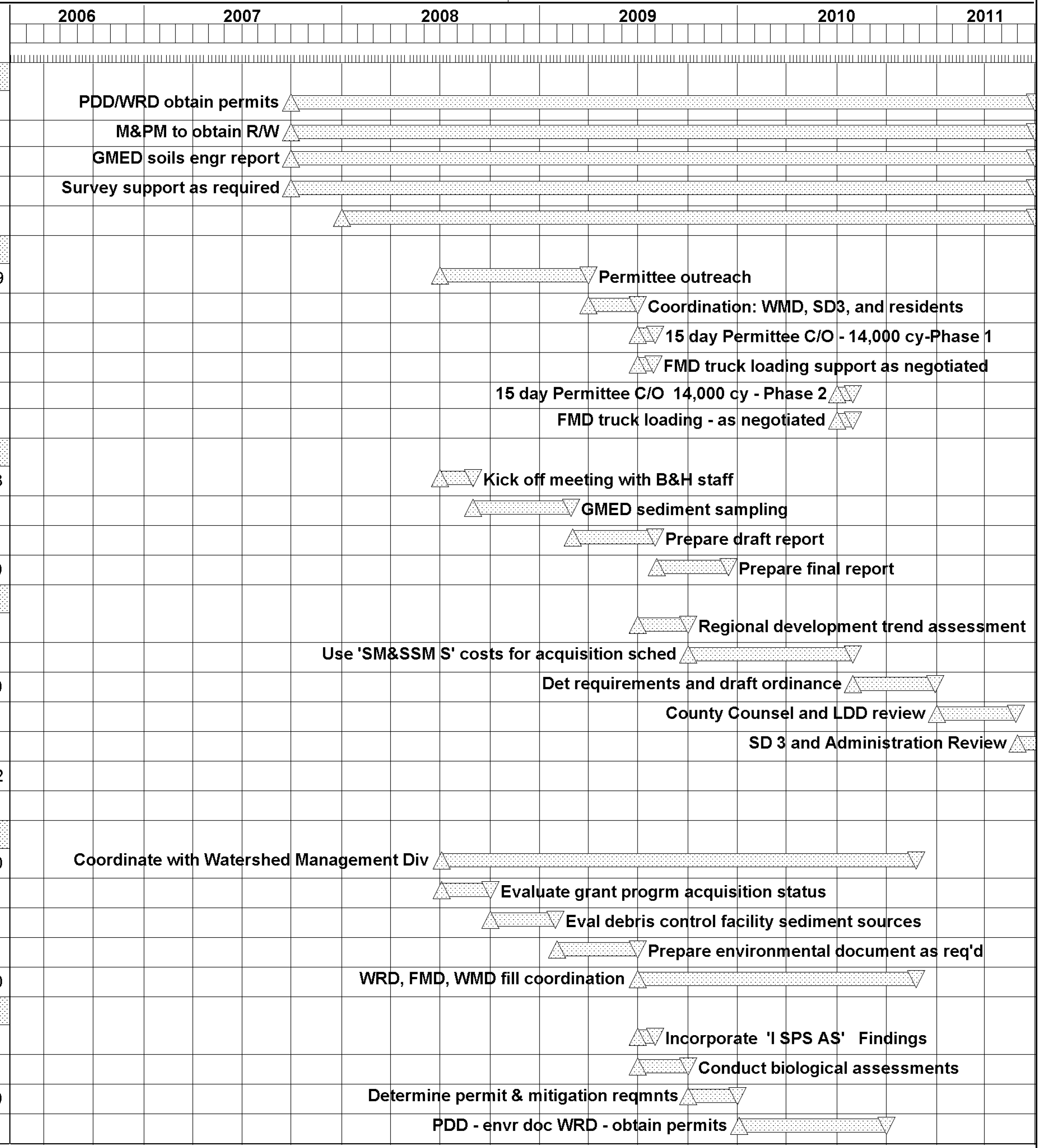
Attachment F06-4d

Los Angeles County Department of Public Works:
Water Resources and Flood Maintenance Divisions

IMPLEMENTATION PLAN FOR SEDIMENT MANAGEMENT STATEGIC PLAN

UPDATED 04/24/06
Sheet 3 of 4

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
Prepare Construction P&S for 11 DB enlrgmnt proj				
122	PDD/WRD obtain permits	784	01OCT07	30JUN11
123	M&PM to obtain R/W	784	01OCT07	30JUN11
124	GMED soils engr report	784	01OCT07	30JUN11
126	Survey support as required	784	01OCT07	30JUN11
127	Construction Division Advertise & award	729	03JAN08	30JUN11
Aqua Vista SPS Permittee Cleanout (C/O)				
131	Permittee outreach	156	01JUL08	30MAR09
132	Coordination: WMD, SD3, and residents	52	01APR09	30JUN09
133	15 day Permittee C/O - 14,000 cy-Phase 1	18	01JUL09	30JUL09
134	FMD truck loading support as negotiated	17	01JUL09	29JUL09
135	15 day Permittee C/O 14,000 cy - Phase 2	17	01JUL10	29JUL10
136	FMD truck loading - as negotiated	17	01JUL10	29JUL10
B&H Dept Beach Replenishment				
141	Kick off meeting with B&H staff	35	01JUL08	28AUG08
142	GMED sediment sampling	104	01SEP08	26FEB09
143	Prepare draft report	88	02MAR09	30JUL09
144	Prepare final report	78	03AUG09	15DEC09
Santa Monica Mtns FMD SPS fee development				
151	Regional development trend assessment	53	01JUL09	30SEP09
152	Use 'SM&SSM S' costs for acquisition sched	173	01OCT09	29JUL10
153	Det requirements and draft ordinance	88	02AUG10	30DEC10
154	County Counsel and LDD review	84	03JAN11	26MAY11
156	SD 3 and Administration Review	34	01JUN11	28JUL11
157	Stakeholder meetings	140	01AUG11	29MAR12
158	Finalyze & submit ordinance to BOS	104	02APR12	27SEP12
Use Sheldon & Strathern Pits as SPSs				
161	Coordinate with Watershed Management Div	502	02JUL08	25NOV10
162	Evaluate grant progrm acquisition status	52	02JUL08	30SEP08
163	Eval debris control facility sediment sources	69	01OCT08	28JAN09
164	Prepare environmental document as req'd	85	02FEB09	29JUN09
165	WRD, FMD, WMD fill coordination	294	01JUL09	25NOV10
Activate 3 underutilized SPSs				
171	Incorporate 'I SPS AS' Findings	18	01JUL09	30JUL09
172	Conduct biological assessments	53	01JUL09	30SEP09
173	Determine permit & mitigation reqmnts	52	01OCT09	30DEC09
174	PDD - envr doc WRD - obtain permits	156	04JAN10	30SEP10



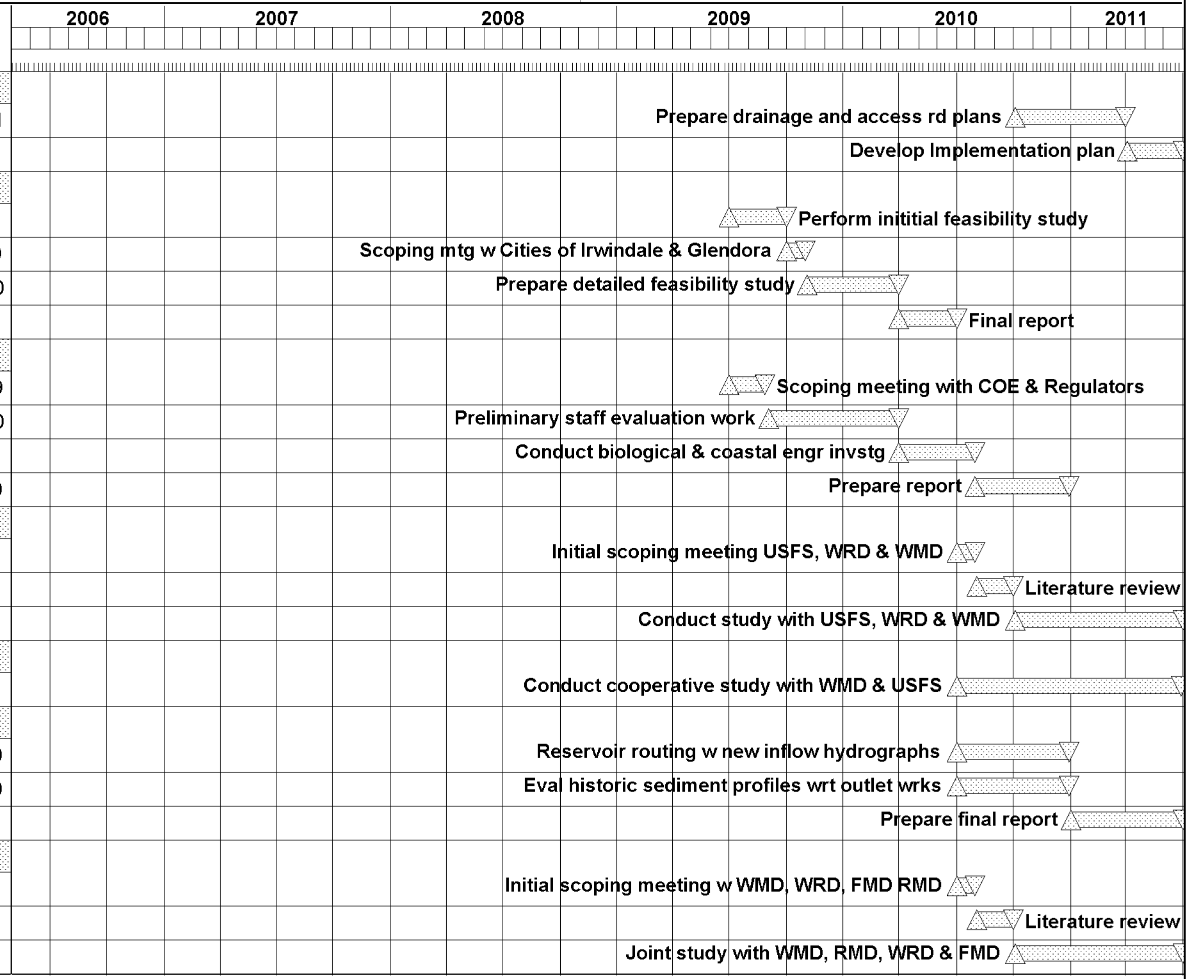
Attachment F06-4d

Los Angeles County Department of Public Works:
Water Resources and Flood Maintenance Divisions

IMPLEMENTATION PLAN FOR SEDIMENT MANAGEMENT STATEGIC PLAN

UPDATED 04/24/06
Sheet 4 of 4

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
Activate 3 underutilized SPSs				
175	Prepare drainage and access rd plans	103	04OCT10	30MAR11
176	Develop Implementation plan	52	04APR11	30JUN11
Dalton SPS C/O-channel rail line to Manning Pit				
181	Perform inititial feasibility study	53	01JUL09	30SEP09
182	Scoping mtg w Cities of Irwindale & Glendora	17	01OCT09	29OCT09
183	Prepare detailed feasibility study	86	02NOV09	30MAR10
184	Final report	52	01APR10	30JUN10
Feasibility study to reactivate Malibu SPS				
191	Scoping meeting with COE & Regulators	34	01JUL09	27AUG09
192	Preliminary staff evaluation work	121	01SEP09	30MAR10
193	Conduct biological & coastal engr invstg	69	01APR10	29JUL10
194	Prepare report	86	02AUG10	28DEC10
USFS cooperative burned area revegation study				
201	Initial scoping meeting USFS, WRD & WMD	17	01JUL10	29JUL10
202	Literature review	34	04AUG10	30SEP10
203	Conduct study with USFS, WRD & WMD	156	04OCT10	30JUN11
SPS feasibility study in Angeles Natl Forest				
211	Conduct cooperative study with WMD & USFS	206	01JUL10	27JUN11
Update reservoir cleanout policy				
221	Reservoir routing w new inflow hydrographs	105	01JUL10	30DEC10
222	Eval historic sediment profiles wrt outlet wrks	105	01JUL10	30DEC10
223	Prepare final report	104	03JAN11	30JUN11
Evaltn hillside vegetation vs road sediment rmvl				
231	Initial scoping meeting w WMD, WRD, FMD RMD	17	01JUL10	29JUL10
232	Literature review	34	04AUG10	30SEP10
233	Joint study with WMD, RMD, WRD & FMD	156	04OCT10	30JUN11



Long-Term Sediment Management Plan

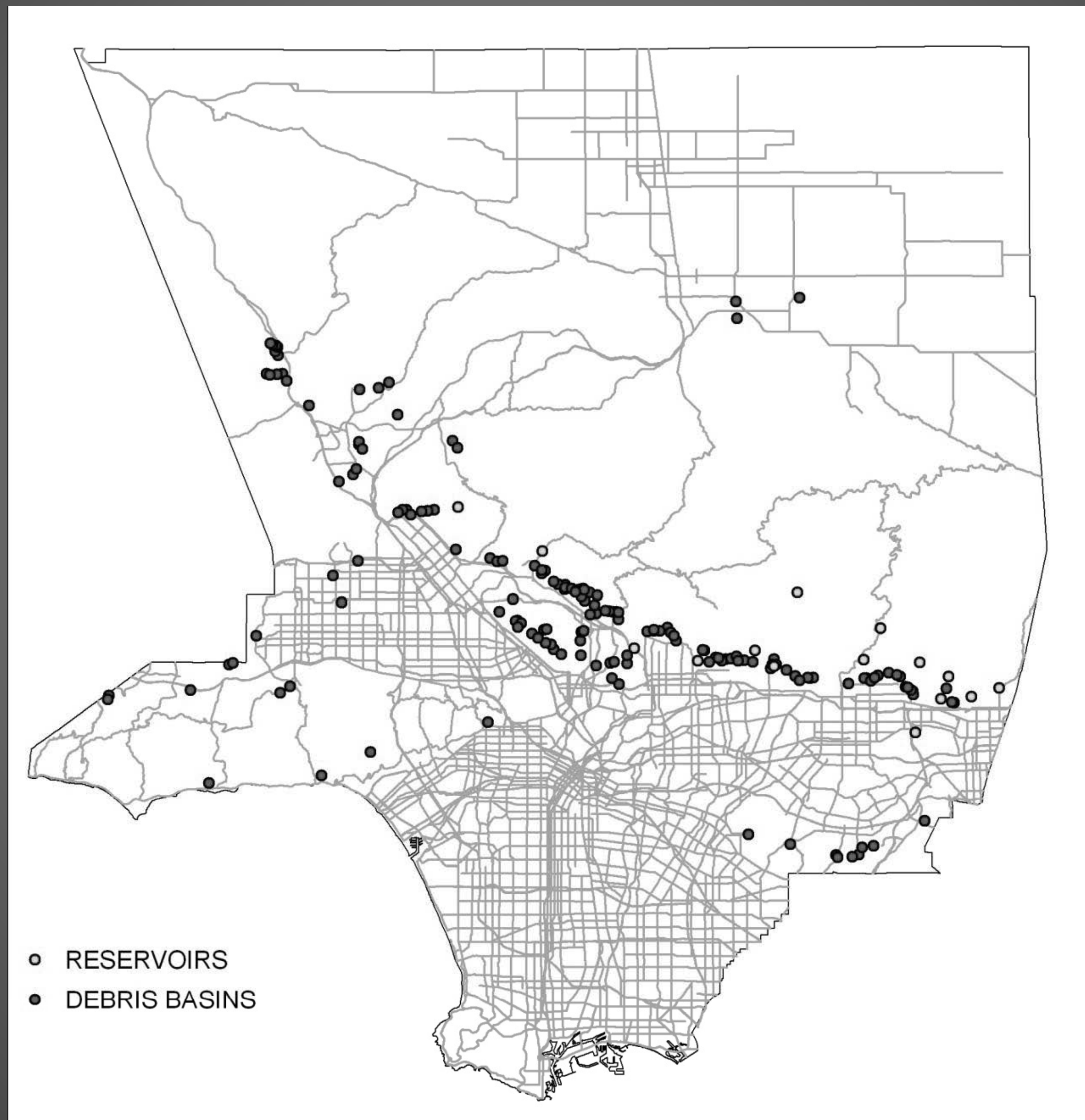
Regional Sediment Management and Water Supply Workshop
July 14, 2010

Presented by: Gary Hildebrand, P.E.

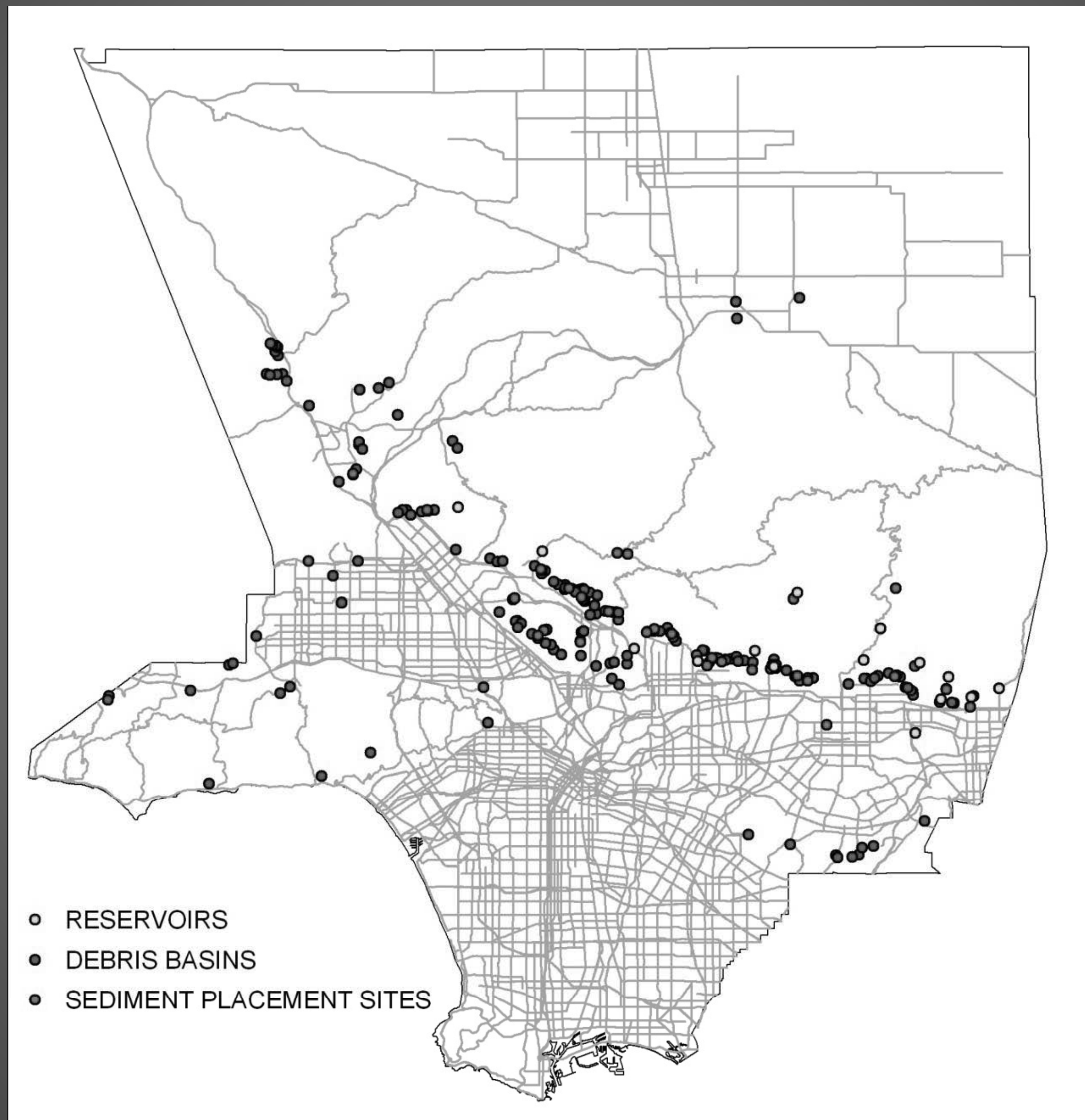
IDEALLY, SOLUTIONS WOULD…

- Beneficially reuse sediment
- Be minimally impactful to the environment and the adjacent communities
- Allow for rapid restoration of flood protection capacity between storms
- Be cost effective

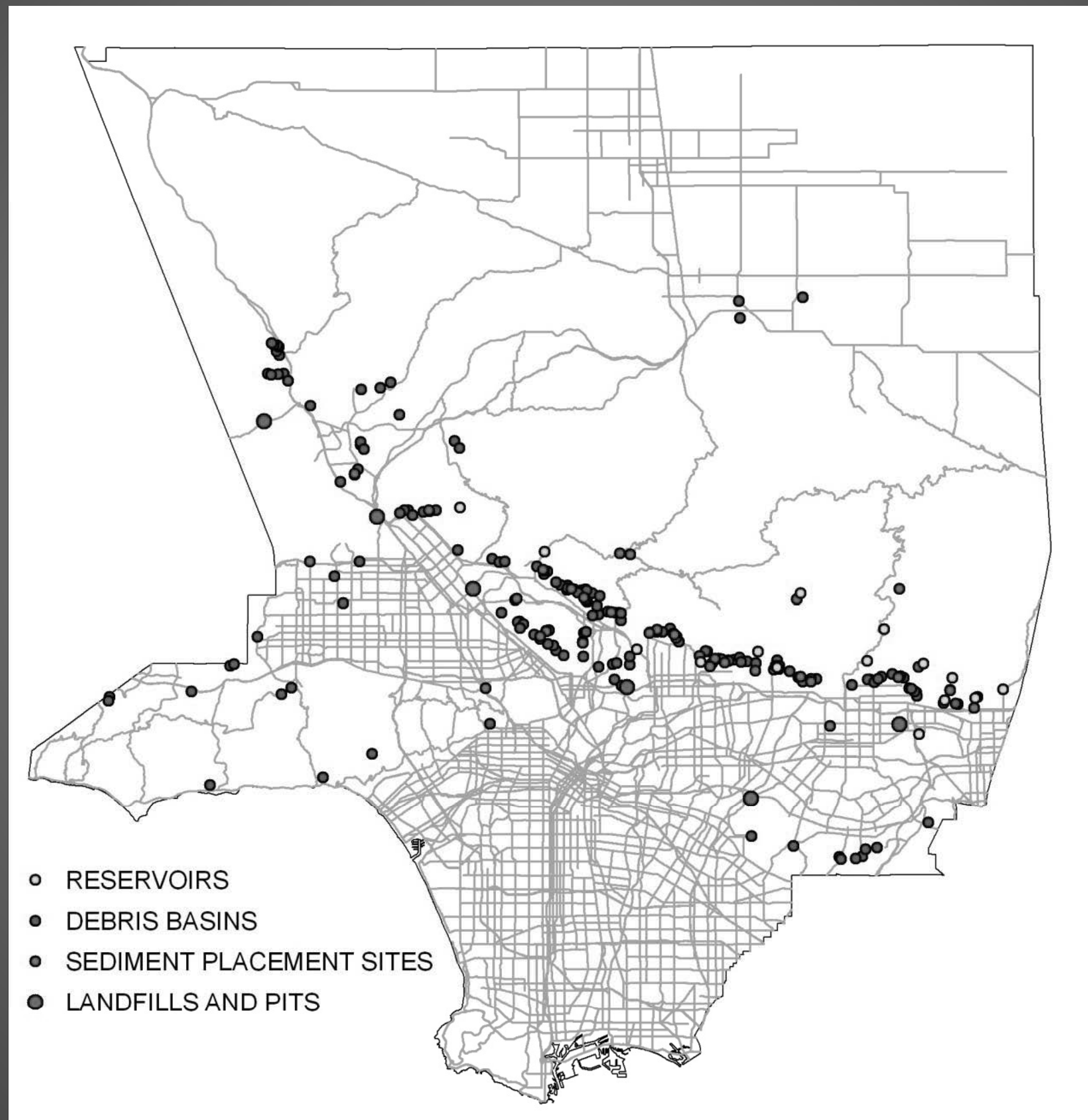
DEBRIS BASINS AND RESERVOIRS



SEDIMENT PLACEMENT SITES



ACTIVE LANDFILLS AND PITS



PLAN DEVELOPMENT

1. Revise projected sediment management needs
2. Create a Stakeholder Task Force
3. Explore, evaluate, and refine strategies with Task Force
4. Incorporate new strategies into updated Long-Term Sediment Management Plan

TASK FORCE

- Key component for success
- Stakeholders such as
  - Regulatory agencies
  - Other agencies
  - Cities
  - Landfill owners and managers
  - Sand and gravel companies
  - Other

TIMELINE

March 2011: Update current sediment management practices, issues, and deficiencies

June 2011: Update projected sediment management needs for the next 20 years

June 2012: Develop strategies to meet the sediment management needs for the next 20 years

June 2012: Prepare Management Strategic Plan to meet sediment management needs for 2012 to 2032

Questions…

Regional Sediment &
Water Supply Workshop

Open Forum…

Regional Sediment &
Water Supply Workshop

Next Steps…

Regional Sediment &
Water Supply Workshop

Long-Term Sediment Management Plan

Regional Sediment Management and Water Supply Workshop
July 14, 2010

Presented by: Gary Hildebrand, P.E.

COUNTY OF LOS ANGELES PUBLIC WORKS Public Service That Works

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Attachment F06-5

IDEALLY, SOLUTIONS WOULD…

- Beneficially reuse sediment
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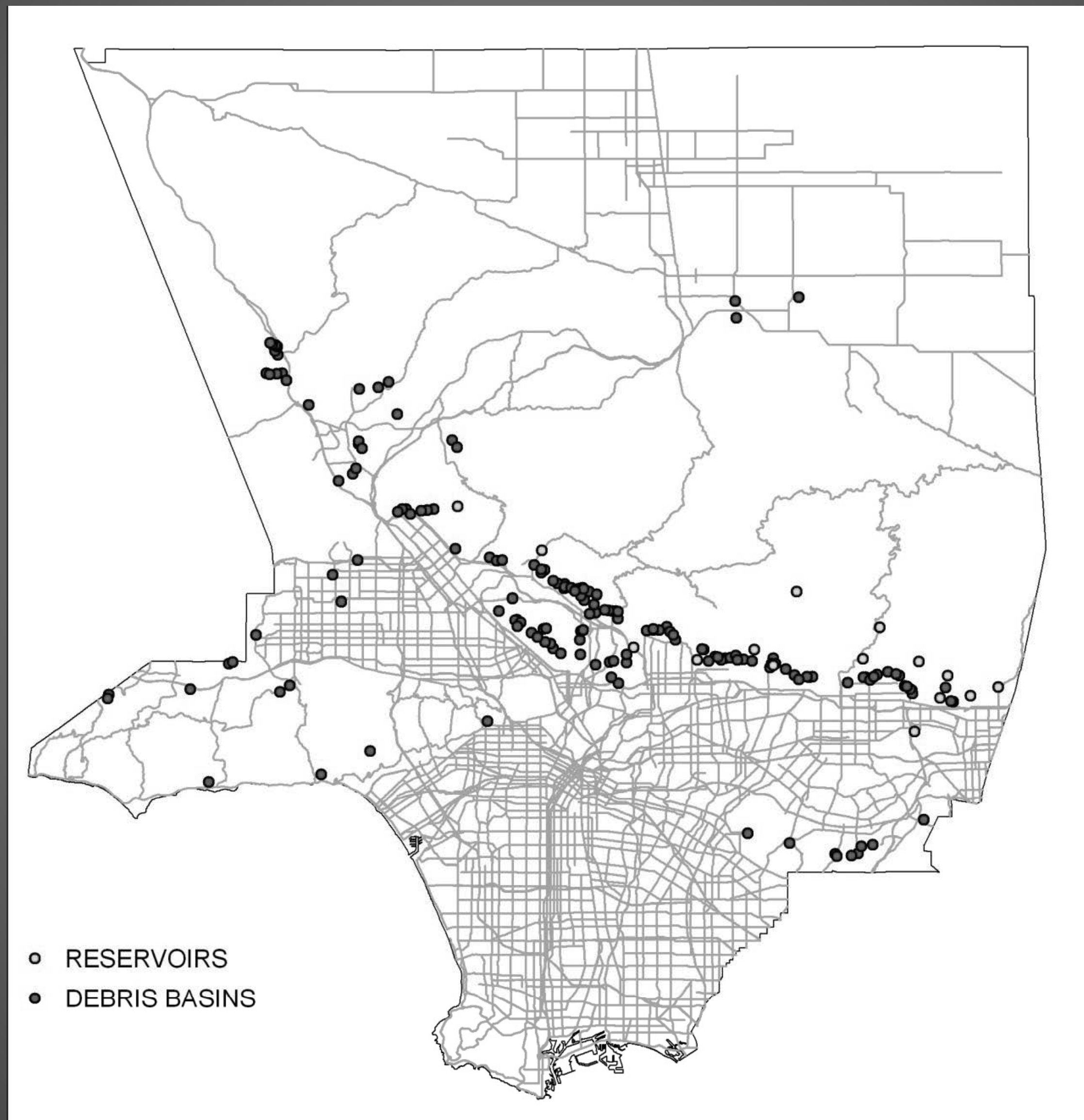
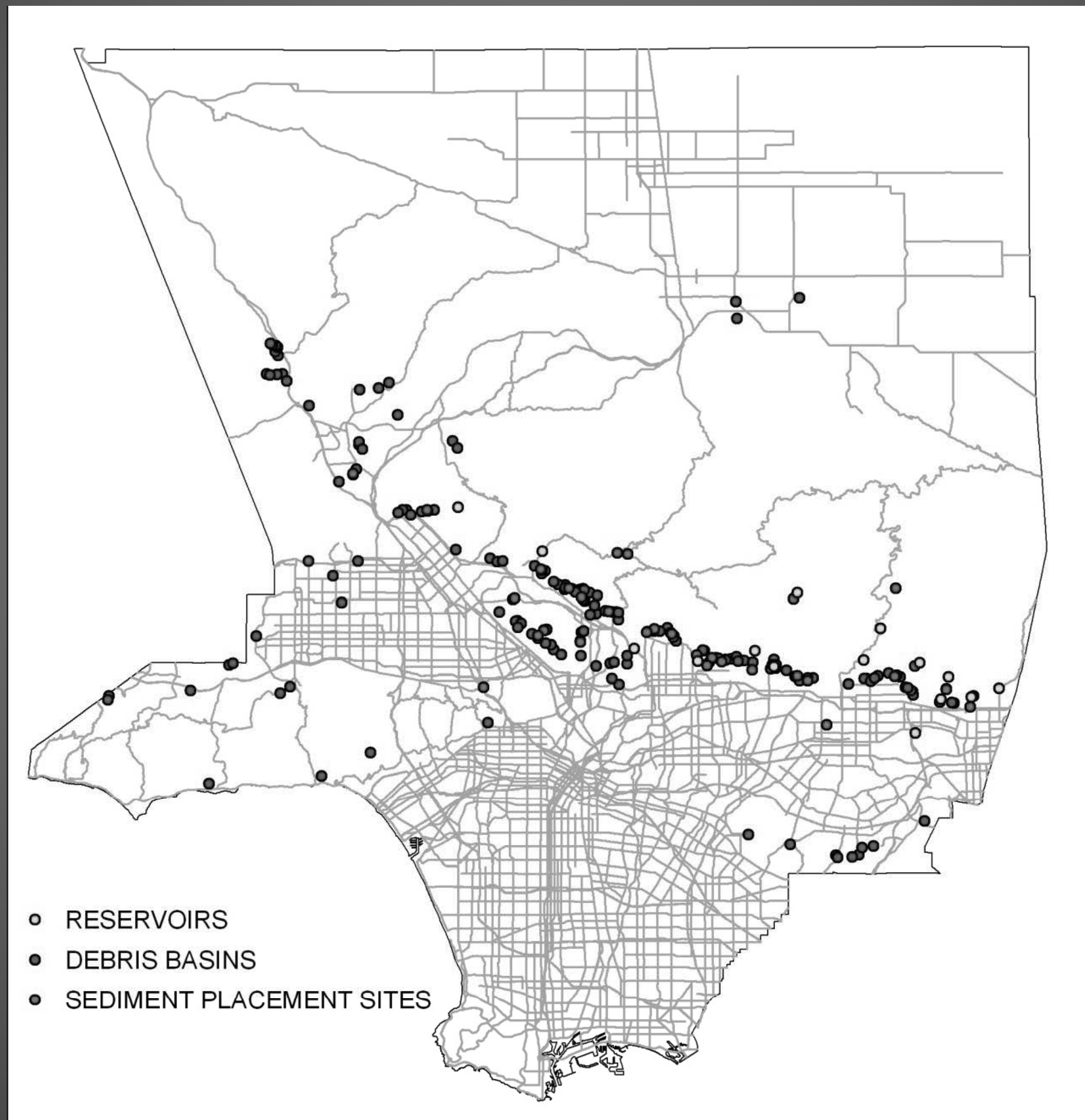
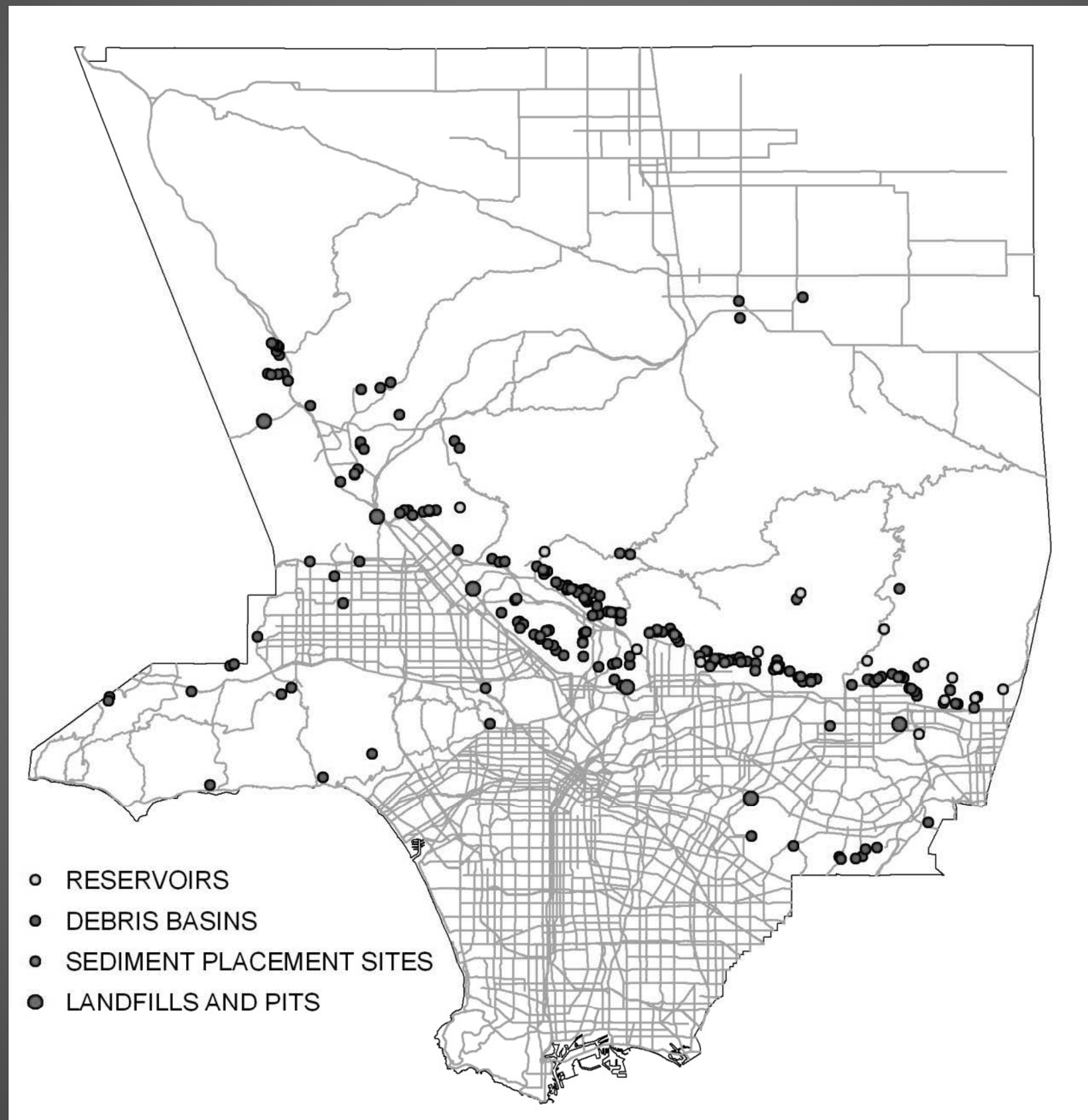
DEBRIS BASINS AND RESERVOIRS



SEDIMENT PLACEMENT SITES



ACTIVE LANDFILLS AND PITS



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Questions...

Regional Sediment &
Water Supply Workshop

Open Forum…

Regional Sediment &
Water Supply Workshop

Next Steps…

Regional Sediment &
Water Supply Workshop

Santa Clara River ML Revision Analysis, Drainage Concept Report (Pace, January 2008)

DCR Volume III of III

Mission Village - TTM #61105

Santa Clara River ML Revision Analysis

Drainage Concept Report

Los Angeles County Adopted ML Map No. 43-ML 26 and 43-ML 27

Prepared for:

NEWHALL LAND
A LENNAR/LNR COMPANY

Submitted to:

LOS ANGELES COUNTY PUBLIC WORKS
Public Service That Works

Prepared by:

PACE
PACIFIC ADVANCED CIVIL ENGINEERING, INC.

Job# 8611E
January 2008
(December 2007) - Revised

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION
SUBDIVISION PLAN CHECKING SECTION – HYDROLOGY UNIT

To: PACE & PSOMAS

Attention MARK KREBS & MATTHEW HEIDEMAN

REVIEW OF TR NO. 061105
TRANS DATE: 01/23/08

[ ] Provide a drainage concept prior to approval of the tentative map. Sufficient information must be submitted to the Department showing the extent of the drainage problem and proposed solution.

[X] The Drainage Concept/SUSMP has been approved subject to conditions noted herein or shown on the returned map.

[ ] The drainage concept/SUSMP is unsatisfactory. Note the reasons stated herein or shown on returned map.

[ ] Prior to tentative map approval, comply with the Standard urban Stormwater Mitigation Plan (SUSMP) requirements. (www.888cleanla.com)

The first .75 inches of stormwater runoff volume from the site must be treated prior to discharging into stormwater conveyance systems.

[ ] Resubmit these sheets with check print, two (2) revised sets of the drainage concept, and the *MORA input/output file(s) on disk* (if applicable) for further consideration. Additional changes maybe required as determined by further review.

COMMENTS:

REVIEWED BY Yong Guo YG **DATE 01/30/08**

YONG GUO - (626) 458-4921

PACE

PACIFIC ADVANCED CIVIL ENGINEERING, INC.

17520 Newhope Street, Suite 200 ▪ Fountain Valley, California 92708 ▪ 714.481.7300 ▪ fax: 714.481.

RECEIVED
JAN 2 3 2008
PROCESSING CENTER
LAND DEVELOPMENT DIVISION

January 22, 2008

Mr. Gary Guo
Land Development Division
LA County Department of Public Works
900 South Fremont, 3rd Floor
Alhambra, CA 91803

Re: Response to Review Comments – Reference VTTM #061105 (Hydraulics and Fluvial Study Embankment) Email dated: 1/10/08 regarding Newhall Ranch Mission Village (VTTM #061105) ML Map Revisions Analysis - Drainage Concept Report – Volume 3 **#8611E**

Dear Mr. Guo,

Pacific Advanced Civil Engineering, Inc (PACE) is pleased to respond to LADPW comments in email dated January 10, 2008 from you regarding the Mission Village ML Revision Analysis - Drainage Concept, Volume 3 report submittal:

LADPW Comment:

We don't have comments on Volumes 1 and 2 of your drainage concept for the said project. **Our comments are only on Volume 3, which is about County Adopted Floodway revision and was submitted and reviewed for the first time**. Please address the comments below and update Volume 3 by next week so that we can approve the drainage concept.

LADPW Comment:

1. Velocities cannot exceed 10 ft/s when determining Floodways. At locations/cross-sections where velocities inside floodplain are already more than 10 ft/s, Floodplain should be taken as Floodway.

PACE Response:

Based on recent conversations with Amir Ibrahim and Ben Willardson at LACDPE, this issue and the 10 fps criteria is currently under review by LACDPW. In the interim, Amir has agreed to allow the Mission Village Drainage Concept Report (DCR) Volumes to be approved conditioned upon Newhall Land's agreement that the ML Map may need to be revised rending LACDPE decision on criteria.

LADPW Comment:

2. ML map revision should be done to the proposed encroachment into County Adopted Floodway by WRP Utility Corridor Bank.

PACE Response:

The proposed Newhall Ranch project includes (4) separate ML Revision DCR's. The Landmark Village project includes the ML Revision for the WRP Utility Corridor Bank. This issue has been discussed with Amir Ibrahim and Ben Willardson and it has been agreed that the Mission Village ML Revision as prepared will be acceptable. In the event the Mission Village project precedes the Landmark project, Newhall Land has agreed that the Mission Village ML DCR will have to be revised to include the Utility Corridor area.

LADPW Comment:

3. Explain why the proposed water surface elevations in Table 5 on page 14 of Volume III are different from those shown on Figure 02 of Volume II.

PACE Response:

Difference in water surface elevation corrected. Volume 2 report has correct values. The Volume 3, Table 5 has been corrected to eliminate the minor differences. The HEC-RAS model for Volume 3 has been revised to match the Volume 2 model. The difference in the water surface elevations was due to minor differences in the cross section reach lengths.

LADPW Comment:

4. Submit hydraulics plan-checking fee of $3,750.00 for the previous review.

PACE Response:

Check provided by Newhall Land/Lennar

LADPW Comment:

5. Submit hydraulics plan-checking fee of $2,500.00 for this review and next review.

PACE Response:

Check provided by Newhall Land/Lennar

Thank you for your time and consideration. If you have any questions or concerns about the letter presented please contact us at (714) 481-7300.

Sincerely,

Mark E. Krebs, P.E.
President

Enclosures: (2) Copies of Revised Mission Village Santa Clara River ML Map Revision Analysis DCR, Vol. 3 dated January 2008 2nd Submittal

Cc: Corey Harpole/Newhall Land – With (1) Copy of Revised Mission Village Santa Clara River ML Map Revision Analysis DCR, Vol. 3
Jeff Johnston/Newhall Land – W/o enclosure

Capital Floodplain & Floodway Revision Analysis

Los Angeles County Adopted ML Map No. 43-ML 26 and 27

Santa Clara River at Proposed Mission Village TTM #61105

January 2008
(December 2007) - Revised

Submitted to:

Los Angeles County Department of Public Works

Prepared on Behalf of:

Newhall Land/Lennar

DRAINAGE CONCEPT/STORM WATER QUALITY PLAN
IS CONCEPTUALLY APPROVED
APPROVED BY: Yong Guo RCE NO. 67363 DATE: 01/30/08
CHECKED BY: NH DATE: 01/30/08
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

Prepared by:

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PACE JN 8611E

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Enclosure

1 Introduction

Pacific Advanced Civil Engineering, Inc. (PACE) has been retained by Newhall Land/Lennar to prepare a Los Angeles County Capital Floodplain and Floodway Revision report for a specific reach of the Santa Clara River. The purpose of this study is to revise the existing and proposed floodplain and floodway presented in the Los Angeles County Adopted ML Maps 43-ML 26 and 43-ML 27 in response to the development of the Mission Village TTM #61105 project along the southern bank of the River. The ML Revision also includes the SR 126 / Commerce Center Interchange bank protection and the proposed Commerce Center Drive Bridge which has been evaluated as part of the Mission Village project.

The project area extends roughly from just upstream of the Santa Clara River and Castaic Creek confluence, and ends approximately 1,200 feet upstream of the proposed Commerce Center Drive Bridge (see *Figure 1*). This report presents hydraulic analyses for an updated existing conditions floodplain and floodway and a proposed conditions floodplain and floodway for the study reach. The updated existing and proposed hydraulic models limit of study extends from upstream of the Castaic Creek confluence to approximately 3500 linear feet upstream of the proposed Commerce Center Drive bridge.

PACE obtained current hydrology data for the capital flood (Q_{CAP}) storm event for the project reach from the Los Angeles County Department of Public Works (LACDPW) Water Resources Division (WRD). The hydraulic analyses in this report are based on this current hydrology. The updated existing hydraulic model incorporates updated topography flown in 1999 and the revised LA County approved Capital flood flow. The proposed model incorporates the updated 1999 topography and the revised LA County approved Capital flood flow rates with the addition of the proposed channel revetment for the Mission Village TTM #61105 project. The baseline HEC-RAS model used in this ML Revision Analysis is the LACDPW approved (April 18, 2006) "Newhall Ranch Fluvial Analysis" report dated March 6, 2006, prepared by PACE (See Approval Letter in *Appendix A*). This hydraulic study will determine the proposed floodplain and floodway for the capital flood storm event.

Proposed Project

In summary, the proposed Mission Village project bank protection and River infrastructure analysis includes the following elements:

- Commerce Center Drive Bridge at Santa Clara River (Sikand submitted Bridge Location, Span and Clearance) – 1,200 LF with 11 piers
- Partially exposed soil cement bank protection – *Mission Village "Commerce Center Bridge South Bank"* - 600 LF
- Partially exposed soil cement bank protection – *Mission Village "SR 126 / Commerce Center Interchange"* on the north bank – 2,000 LF*.

  *Note: This portion of the bank protection is being included as part of the Mission Village development. It is a stand alone project already underway directed by LACDPW/ CALTRANS & NLF. For modeling purposes only, this portion of bank protection will be analyzed in the proposed condition as a part of the Mission Village project.
- Buried soil cement bank protection – *Mission Village "San Jose Flats"* on the south bank – 1,100 LF

Refer to *Figure 1 and 2* for project location map and typical bank protection cross section, respectively.

A PACE prepared, July 2006 Drainage Concept Report (DCR) for the Mission Village TTM #61105 project that details the soil cement bank protection design has been submitted and reviewed and is only waiting for a Mission Village "on-site" DCR for full LACDPW approval (See *Appendix D*). The design top and toe of bank protection established in the DCR are used in this proposed ML floodplain and floodway report.

Some of the major items discussed and/or included in this ML Map Revision report are listed below:

- A summary of the hydrology and hydraulic details used to determine the updated existing and the proposed capital floodway and floodplain.
- LA County adopted floodway ML Maps No. 43-ML 26 and No. 43-ML 27 both dated August 6, 1985 .
- Updated existing conditions capital floodplain and floodway hydraulic analysis from Santa Clara River and Castaic Creek confluence to approximately 3,500 feet upstream of the proposed Commerce Center Drive Bridge.
- Proposed conditions floodplain and floodway hydraulic analysis from Santa Clara River and Castaic Creek confluence to approximately 3,500 feet upstream of the proposed Commerce Center Drive Bridge.
- Revised existing and proposed conditions capital floodplain and floodway mapping.
- Hard copy output and digital files of the HEC-RAS existing and proposed conditions hydraulic models.

P:\8611E\6-GIS\mxds\DrainageConceptReport_1107\8611E_MissionVillageLocationMapPC1_061907.mxd

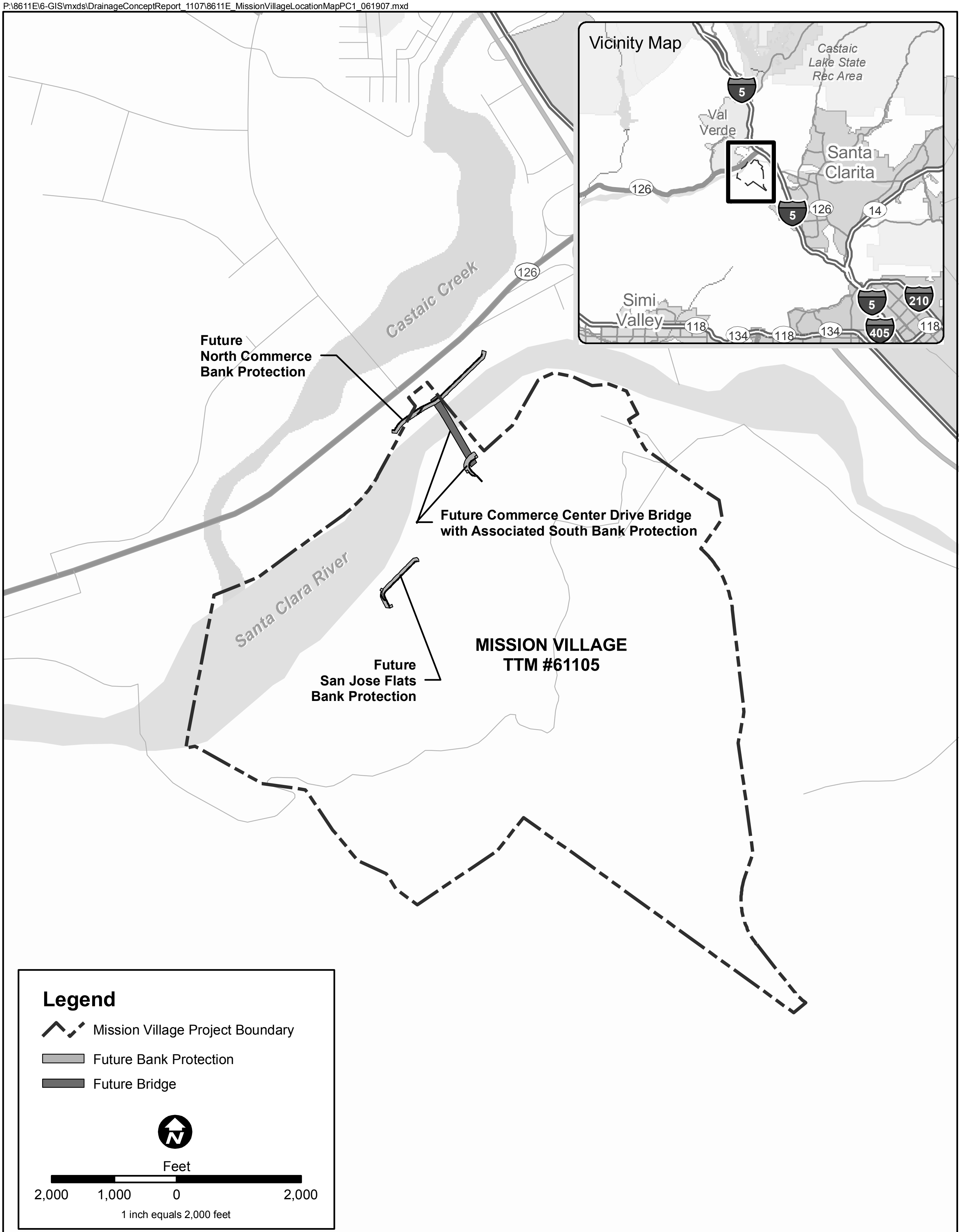


FIGURE 1	PACE PACIFIC ADVANCED CIVIL ENGINEERING 17520 NEWHOPE STREET, SUITE 200 FOUNTAIN VALLEY, CA 92708 PH (714) 481-7300 FAX (714)481-7299	SCALE 1"= 2000' DESIGNED TH DRAWING TH CHECKED CVH DATE 11/12/07 JOB NO. 8611-E	JOB: MISSION VILLAGE DRAINAGE CONCEPT REPORT LOS ANGELES CO CA TITLE: PROJECT LOCATION MAP

2 Hydrology

2.1 Regional Hydrology

The total Santa Clara River Watershed encompasses 1,621 square miles (within 644 square miles at the Los Angeles County Line) with 17-inch average annual rainfall in the region The River lies within the jurisdiction of the LACDPW, which has completed an extensive hydrologic analysis of the watershed and provided updated capital flood flow rates for this reach of the river.

All of the proposed developed area, 1,252 acres, of Mission Village TTM #61105 is currently above or will be filled to be above the capital floodplain and therefore none of the improvements proposed on the site would be subject to flood hazard from the River or other nearby drainages.

The updated existing and proposed floodplain and floodway hydraulic analyses are determined using LACDPW standards using the capital flood flowrate. The capital flood event assumes a burned watershed and a debris bulked peak flow. The design storm established by LACDPW is defined as follows:

1. The design storm is assumed to occur on already saturated soils over a period of four days, with the maximum rainfall falling on the fourth day. During the 24-hour period of maximum rainfall, the rainfall intensity typically increases during the first 70-90% of the period and decreases in the remaining time. Furthermore, approximately 80% of the amount of the 24-hour rainfall falls within the same 70-90% of the period.

2. When converting rainfall to runoff, rainfall that is not lost due to hydrologic processes of interception, evaporation, transpiration, depression storage, infiltration or percolation is assumed to be surface runoff.

3. The natural portions of the watershed are assumed to have been burned by fire, which decreases soil infiltration.

4. A bulking factor is assumed. In the area where a watershed is burned, the runoff would carry with it a large layer of eroded topsoil, burned trees and brush. To account for the quantity of debris, the design flow rate is artificially increased by a percentage increase in flow rate, or bulking factor.

Table 1 below presents the capital flood discharge rate and the applicable HEC-RAS section within the Santa Clara River at the Mission Village project location.

Table 1 - Design Hydrology for Mission Village

HEC-RAS Reach Cross-Section	Q-cap Flowrate (cfs)	Reach Location Description
39755	115,111	Approximately 3,500 ft Upstream of Proposed Commerce Center Drive Bridge
36080	116,236	D/S from Proposed Commerce Center Drive Bridge to Castaic Creek Confluence

3 Updated Existing Hydraulic Analysis and Floodplain/Floodway Mapping

3.2 HEC-RAS Models

Table 2 below shows the different HEC-RAS hydraulic models generated for the Santa Clara River and utilized for the updated existing and proposed conditions floodplain and floodway hydraulic analyses.

Table 2 - HEC-RAS Models for the Santa Clara River

HEC-RAS File Name	Description	Use
"ML – Mission Village Existing.prj"	Q_{CAP}, n=0.060	To determine updated existing capital floodplain and floodway limits along the Santa Clara River from RS 39755 to RS 32605.
"ML – Mission Village Proposed.prj"	Q_{CAP}, n=0.060	To determine proposed capital floodplain and floodway limits along the Santa Clara River from RS 39755 to RS 32605 based on proposed bank protection for Mission Village TTM #61105.

(1) See Appendices B & C for copies of HEC-RAS hydraulic models.

The baseline HEC-RAS model used in this ML Revision Analysis is a duplicate of the model contained in the LACDPW approved (April 18, 2006) "Newhall Ranch Fluvial Analysis" report dated March 6, 2006, prepared by PACE (See Approval Letter in *Appendix A*). The updated HEC-RAS model output can be found in *Appendices B and C* respectively. The updated existing and proposed floodplains are identical to those found in the earlier mentioned Mission Village Drainage Concept Report.

3.3 LA County Adopted Capital Floodplain and Floodway

The existing Los Angeles County Capital floodplain and floodway ML maps 43-ML 26 and 43-ML 27 were adopted by the Board of Supervisors on August 6, 1985 by Ordinance No. 85-0134. Refer to *Figure 3A* and *3B* for the existing LA County Capital floodplain and floodway ML maps, (reference only).

3.4 Updated Existing Capital Floodplain and Floodway

The updated existing conditions hydraulic analysis was generated in order to establish the current existing LA County floodplain from just upstream of the Castaic Creek and Santa Clara River confluence to approximately 3,500 feet upstream of the proposed Commerce Center Drive Bridge. The current ML Map floodplain and floodway and the associated hydraulic models are being updated by this analysis due to capital flood flow rate changes, updated topographic mapping, and an updated HEC-RAS model of the Santa Clara River. The updated existing conditions floodplain and floodway analyses utilize these changes and incorporate LACDPW standards for floodplain mapping using a Manning's value (n) of 0.060 and the revised capital flood flow rate. The baseline for this hydraulic analysis is based on the LACDPW approved "Newhall Ranch Fluvial Analysis" Report dated March 6, 2006, prepared by PACE (See Approval Letter in *Appendix A*). This baseline model is the updated existing condition floodplain model. The floodway model for this condition was generated from the floodplain model using HEC-RAS Methods 4 and 1 with identical cross sections and reach parameters, the capital flood flow rate and a constant Manning's value (n) of 0.060.

Table 3 below provides a summary of the revised existing conditions hydraulic analysis for the floodplain and floodway. The table compares several hydraulic elements. The most important elements to analyze are the water surface elevations and top widths for the floodway analysis. The maximum rise allowable in water surface elevations is 1.0 ft. The differences between the floodplain and floodway water surface elevations are all within the allowable 1.0-foot increase. As a result of encroaching into the floodplain, the water surface elevation increase was used to determine an acceptable floodway boundary. The 1985 Ordinance ML lines and the updated existing condition floodway and floodplain can be seen in *Figure 4*.

Table 3 – Updated Existing Conditions Floodplain and Floodway Comparison, n=0.060

River Station	Updated Existing FP W.S. Elev (ft)	Updated Existing FW W.S. Elev (ft)	Delta WSE (ft)	Updated Existing FP Top Width (ft)	Updated Existing FW Top Width (ft)
39755	1010.7	1011.7	**1.0**	1465	917
39605	1010.0	1011.0	**1.0**	1368	896
39310	1008.4	1009.4	**1.0**	1595	880
39100	1007.8	1008.8	**1.0**	1495	864
38925	1007.1	1008.0	**0.9**	1360	850
38710	1006.1	1006.7	**0.6**	1209	757
38475	1003.6	1004.5	**0.9**	948	649
38300	1002.7	1003.6	**0.9**	924	620
38065	1001.3	1001.7	**0.5**	803	570
37810	997.7	998.6	**0.9**	712	587
37655	995.1	996.0	**0.8**	803	673
37390	994.1	995.0	**0.9**	1019	823
37135	992.6	993.5	**0.8**	1107	884
36930	991.8	992.7	**1.0**	1195	955
36735	990.8	991.9	**1.0**	1234	1006
36515	990.0	991.0	**1.0**	1344	1061
36265	988.9	989.9	**1.0**	1383	1124
36080	988.0	988.9	**0.9**	1481	1167
35845	986.9	987.7	**0.8**	1567	1134
35725	986.0	986.7	**0.7**	1520	1106
35515	984.7	985.6	**0.9**	1453	1092
35245	982.8	983.6	**0.8**	1569	1092
35040	981.3	982.3	**1.0**	1473	1105
34860	980.0	981.0	**1.0**	1397	1091
34720	979.0	979.9	**0.9**	1435	1053
34495	977.4	978.3	**0.9**	1426	1028
34310	976.3	977.3	**1.0**	1322	1058
34090	975.0	975.9	**0.9**	1304	1078
33880	973.6	974.6	**1.0**	1428	1144
33710	972.6	973.6	**1.0**	1603	1202
33500	971.3	972.4	**1.0**	1707	1295
33310	970.4	971.3	**0.9**	1771	1304
33115	969.6	970.5	**0.9**	1830	1349
32795	967.8	968.7	**1.0**	1843	1369
32605	966.6	967.6	**1.0**	2252	1427

Notes:
See *Appendix B* for Updated Existing Conditions Floodplain & Floodway HEC-RAS Model

4 Proposed Channel Improvements

The proposed channel improvements for the Mission Village development consist of three separate pieces of soil cement bank protection and the Commerce Center Drive Bridge. Project channel improvements are summarized below:

Proposed *"Commerce Center Drive"* Bridge over the River would include abutments and bank stabilization on the northern and southern sides of the bridge, which would protect against the erosive forces of the River. The Bridge Location, Span and Clearance Final Submittal have been proposed by Sikand. The preliminary bridge information is included in this report as *Appendix E*. The bank protections; *SR 126 HWY Widening at Commerce Center Bridge* and *Commerce Center Bridge South Bank* will be designed and constructed to LACDPW standards and will ultimately be accepted by LACDPW for maintenance.

Mission Village "Commerce Center Bridge South Bank" is partially exposed soil cement bank protection located along the south bank of the River and on the northern portion of the proposed Mission Village Project Site. The bank protection is approximately 600 linear feet. The horizontal alignment starts approximately 450 feet west from the central line of the proposed "Commerce Center Drive Bridge," runs under the Bridge and ends approximately 150 feet east (upstream) adjacent to the pre-project slope. Riprap will be utilized for the transition structure at the terminus on the west end east end of bank protection and will tie into the high ground of pre-project riverbank.

Mission Village "SR 126 HWY Widening at Commerce Center Bridge" is partially exposed soil cement bank protection located south of State Route 126, along the north bank of the river at the north end of Commerce Center Drive Bridge. This soil cement is considered as part of the proposed condition for HEC-RAS modeling purposes for the Mission Village project yet is actually a part of the joint CALTRANS/LA County Department of Public Works Project titled, "State Route 126 widening and Commerce Center Drive interchange project; State Clearing House #2003101127". This bank protection is approximately 2,000 linear feet with a horizontal alignment that starts approximately 850 feet west from the central line of proposed "Commerce Center Drive" Bridge, runs under the Bridge and ends approximately 1,150 feet east (upstream) adjacent to the slope of the proposed road. Riprap will be utilized for the transition structure at the terminus and will tie into the high ground on the west end of bank protection and into the slope of pre-project road on the east end of bank protection.

Mission Village "San Jose Flats" is buried soil cement bank protection located along the south bank of the River and on the northern portion of the proposed Mission Project Site. The bank protection is approximately 1,100 linear feet and protects the proposed Mission Village stormwater quality basin. The horizontal alignment starts approximately 1,700 feet west from the central line of the proposed "Commerce Center Drive" Bridge. Riprap will be utilized for the transition structure at the terminus on the west end east end of bank protection and will tie into the high ground of pre-project riverbank.

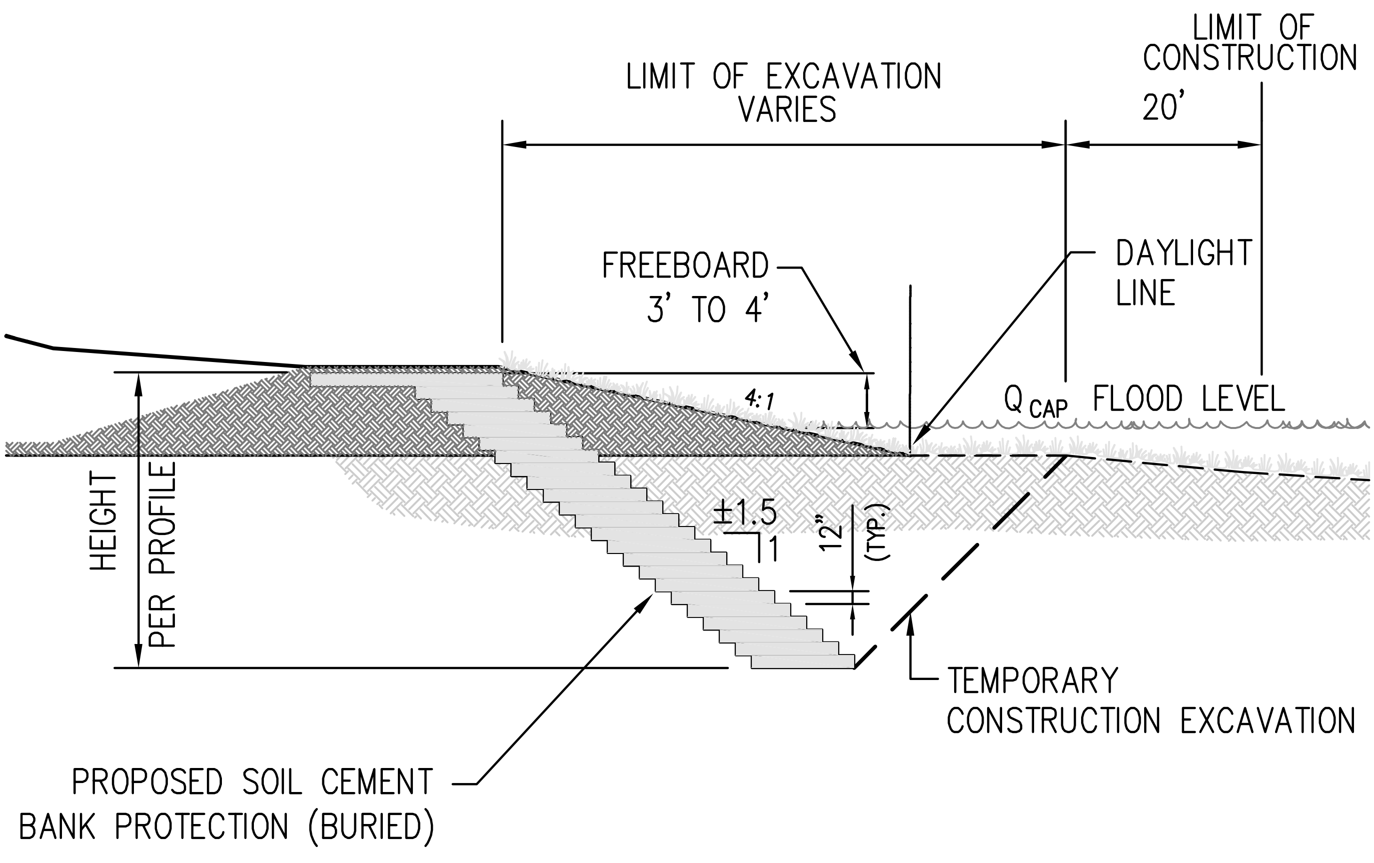
4.1 Bank Protection Design Summary

The Mission Village proposed soil cement bank protections are primarily necessary to protect the proposed development and associated local and regional infrastructure (bridge and utilities) from potential erosion due to the River.

PACE has utilized the revised Capital Flood (Q_{cap}) flow rates from LACDPW Water Resources Division for the entire River watershed. Based on current hydrology, LACDPW hydraulic design criteria and updated topographic mapping, the proposed soil cement bank protection design has been established per the recently submitted Drainage Concept Report for Mission Village TTM #61105 dated July 2006 which can be referenced in *Appendix D*. The study evaluated the hydraulic analysis and compared several methodologies in order to determine the horizontal and vertical bank protection alignment.

Proposed bank protection will consist of an 8-foot wide soil cement section with varied height (top and toe as required) and a 1.5:1 slope. Upon completion of the installation, the soil cement will be backfilled (buried) with native soils on a 4:1 slope. The excavation required to construct the bank protection will be backfilled and returned to pre-project grade, except as overlayed by the 4:1 fill slope (See *Figure 2).*

The proposed floodplain hydraulic model includes the final bank protection alignments to establish the water surface elevations for the Santa Clara River capital flood storm event.



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SCALE	N.T.S.
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DRAWN	JEP
CHECKED	MEK
DATE	NOV. 2007
JOB NO.	8611E

SANTA CLARA RIVER

TYPICAL SOIL CEMENT CROSS SECTION

FIGURE

2

Xrefs:
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5 Proposed Hydraulic Analysis and Floodplain/Floodway Mapping

5.1 Proposed Capital Floodplain and Floodway

The hydraulic model utilized to generate the proposed conditions floodplain and floodway was taken from the LACDPW approved HEC-RAS analysis for the “Newhall Ranch Fluvial Analysis” report dated March 6, 2006, prepared by PACE (See *Appendix A*). Similar to the updated existing conditions floodplain and floodway model, the proposed conditions HEC-RAS model includes updated topography and updated LACDPW approved capital flood flow rates. See *Appendix C* for model output results.

The proposed floodway hydraulic model was generated by taking the proposed condition floodplain and using methods 4 and 1 to encroach the floodplain water surface elevations to the maximum allowable of 1.0 ft. *Table 4* below provides a summary of the proposed floodplain and floodway hydraulic analysis. *Table 5* was prepared to show the comparison between existing and proposed floodplain and floodway hydraulic analysis, respectively.

Hydraulic analysis is only valid within the limits of study. Once outside the limits of study, the existing ML floodplain and floodway lines govern as no analysis has been performed in these areas. As can be seen in *Figure 4* and *Figure 5*, the updated existing floodplain and floodway lines as well as the proposed floodplain and floodway lines are shown to “tie” directly into their respective existing ML floodplain and floodway lines at the upstream and downstream limits of study.

Figure 6A and 6B are revised ML Map No. 43-ML 26 and ML Map No. 43-ML 27 were created to replace the respective existing LA County adopted ML Maps. Refer to *Figure 6A and 6B* for capital floodway mapping.

Table 4 – Proposed Conditions **Floodplain and Floodway** Comparison, n=0.060

River Station	Proposed FP W.S. Elev (ft)	Proposed FW W.S. Elev (ft)	Delta WSE (ft)	Proposed FP Top Width (ft)	Proposed FW Top Width (ft)
39755	1010.7	1011.7	**1.0**	1465	917
39605	1010.0	1011.0	**1.0**	1368	896
39310	1008.4	1009.5	**1.0**	1596	880
39100	1007.8	1008.8	**1.0**	1496	864
38925	1007.1	1008.0	**0.9**	1361	850
38710	1006.2	1006.8	**0.6**	1210	757
38475	1003.7	1004.6	**0.9**	950	649
38300	1002.8	1003.7	**0.9**	926	620
38065	1001.4	1001.9	**0.5**	811	570
37810	998.3	999.2	**0.8**	740	587
37655	997.1	998.0	**0.8**	855	668
37390	995.9	996.6	**0.7**	817	686
37135	994.2	994.9	**0.8**	806	707
36930	993.2	994.0	**0.7**	867	714
36735	992.2	993.1	**0.9**	908	784
36515	991.4	992.5	**1.0**	986	867
36374	991.0	992.0	**1.0**	1090	897
36299	*Proposed Commerce Center Drive Bridge*				
36240	989.2	990.2	**1.0**	1094	843
36080	988.0	989.0	**0.9**	1149	871
35845	986.9	987.6	**0.7**	1434	969
35725	986.0	986.7	**0.7**	1432	1001
35515	984.7	985.5	**0.9**	1453	1067
35245	982.8	983.6	**0.8**	1569	1092
35040	981.3	982.3	**1.0**	1473	1105
34860	980.0	981.0	**1.0**	1397	1091
34720	978.9	979.9	**1.0**	1434	1053
34495	977.4	978.4	**1.0**	1424	1028
34310	976.2	977.3	**1.0**	1391	1058
34090	975.0	975.9	**0.9**	1352	1078
33880	973.6	974.6	**1.0**	1447	1144
33710	972.6	973.6	**1.0**	1623	1202
33500	971.3	972.4	**1.0**	1707	1275
33310	970.4	971.3	**0.9**	1771	1304
33115	969.6	970.5	**0.9**	1830	1349
32795	967.8	968.7	**1.0**	1843	1369
32605	966.6	967.6	**1.0**	2252	1427

Notes:
Cross-sections containing proposed bank protection are indicated with bold-face station number text
See *Appendix C* for Proposed Conditions Floodplain & Floodway HEC-RAS Model

Table 5 – Updated Existing & Proposed Conditions **Floodplain** Comparisons, n=0.060

River Station	Updated Existing FP W.S. Elev (ft)	Proposed FP W.S. Elev (ft)	Delta WSE (ft)	Updated Existing FP Channel Velocity (ft/s)	Proposed FP Channel Velocity (ft/s)	Delta Velocity (ft/s)	Updated Existing FP Top Width (ft)	Proposed FP Top Width (ft)	Delta Top Width (ft)
39755	1010.7	1010.7	**0.0**	10.5	10.5	0.0	1465	1465	0
39605	1010.0	1010.0	**0.0**	9.8	9.8	0.0	1368	1368	0
39310	1008.4	1008.4	**0.0**	10.1	10.1	0.0	1595	1596	-1
39100	1007.8	1007.8	**0.0**	8.4	8.4	0.0	1495	1496	-1
38925	1007.1	1007.1	**0.0**	8.6	8.5	0.0	1360	1361	-1
38710	1006.1	1006.2	**0.0**	8.9	8.9	0.0	1209	1210	-1
38475	1003.6	1003.7	**0.1**	12.5	12.4	-0.1	948	950	-2
38300	1002.7	1002.8	**0.1**	11.1	11.0	-0.1	924	926	-2
38065	1001.3	1001.4	**0.1**	11.2	11.1	-0.1	803	811	-8
37810	997.7	998.3	**0.6**	14.5	13.8	-0.7	712	740	-27
37655	995.1	997.1	**2.0**	15.2	12.6	-2.6	803	855	-52
37390	994.1	995.9	**1.9**	10.2	10.2	0.0	1019	817	201
37135	992.6	994.2	**1.5**	9.8	11.0	1.2	1107	806	301
36930	991.8	993.2	**1.5**	9.1	10.0	0.9	1195	867	329
36735	990.8	992.2	**1.4**	9.1	10.0	0.9	1234	908	325
36515	990.0	991.4	**1.4**	8.4	8.8	0.4	1344	986	358
36374	-	991.0	-	-	8.3	-	-	1090	-
36299	*Proposed Commerce Center Drive Bridge*								
36240	-	989.2	-	-	9.7	-	-	1094	-
36080	988.0	988.0	**0.0**	8.2	10.0	1.8	1481	1149	332
35845	986.9	986.9	**0.0**	8.3	8.5	0.2	1567	1434	133
35725	986.0	986.0	**0.0**	9.4	9.3	-0.1	1520	1432	88
35515	984.7	984.7	**0.0**	10.3	10.3	0.0	1453	1453	0
35245	982.8	982.8	**0.0**	10.4	10.4	0.0	1569	1569	0
35040	981.3	981.3	**0.0**	11.4	11.4	0.0	1473	1473	0
34860	980.0	980.0	**0.0**	9.9	9.9	-0.1	1397	1397	0
34720	979.0	978.9	**-0.1**	9.4	9.5	0.0	1435	1434	0
34495	977.4	977.4	**-0.1**	9.7	9.2	-0.5	1426	1424	2
34310	976.3	976.2	**0.0**	10.0	9.7	-0.3	1322	1391	-68
34090	975.0	975.0	**0.0**	9.4	9.1	-0.3	1304	1352	-49
33880	973.6	973.6	**0.0**	9.3	9.2	-0.1	1428	1447	-19
33710	972.6	972.6	**0.0**	8.7	8.7	0.0	1603	1623	-21
33500	971.3	971.3	**0.0**	8.9	8.9	0.0	1707	1707	0
33310	970.4	970.4	**0.0**	7.8	7.8	0.0	1771	1771	0
33115	969.6	969.6	**0.0**	7.2	7.2	0.0	1830	1830	0
32795	967.8	967.8	**0.0**	8.0	8.0	0.0	1843	1843	0
32605	966.6	966.6	**0.0**	8.1	8.1	0.0	2252	2252	0

Notes:
Cross-sections containing proposed bank protection are indicated with bold-face station number text
See *Appendix B* for Updated Existing Conditions Floodplain & Floodway HEC-RAS Model
See *Appendix C* for Proposed Conditions Floodplain & Floodway HEC-RAS Model

Summary

This report proposes a revision to the existing LA County Adopted Floodway Map No. 43-ML 26 and No. 43-ML 27 for the area along the Santa Clara River located just upstream of the Castaic Creek confluence up to approximately 3,500 feet upstream of the proposed Commerce Center Drive Bridge. The purpose of this report is to show the following:

1) Existing LA County Adopted Floodplain and Floodway boundaries.

2) Updated existing conditions hydraulic analysis based on current LADPW Q_{CAP} hydrology and hydraulic design criteria.

3) Proposed conditions hydraulic analysis based on current LADPW Q_{CAP} hydrology and hydraulic design criteria.

4) Methods utilized to generate the updated existing and proposed conditions floodway boundaries.

5) Revised LA County ML Map No. 43-ML 26 and ML Map No. 43-ML 27 intended to replace the respective existing LA County Adopted ML Maps.

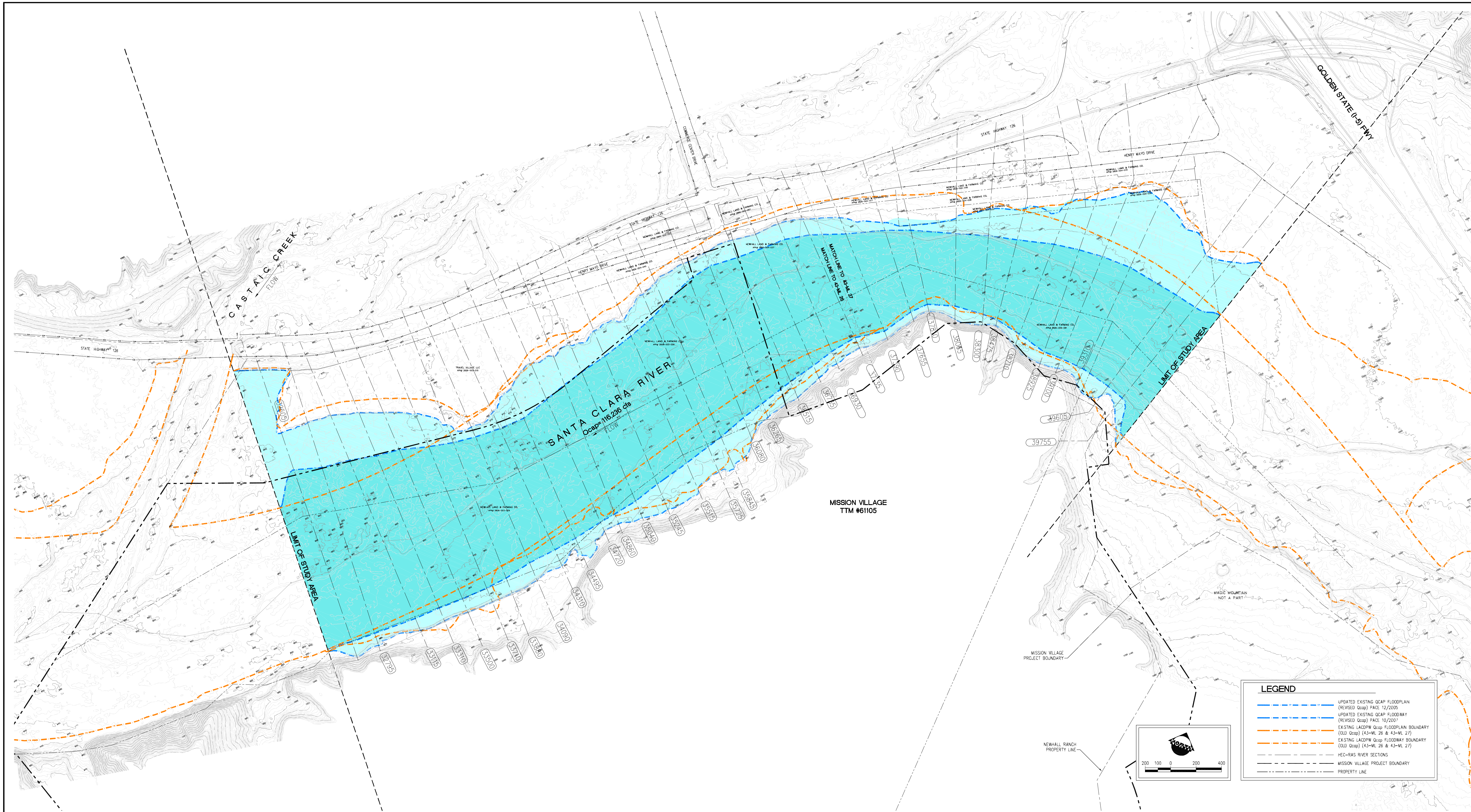
PACE proposes that Newhall Land/Lennar revise the LA County adopted capital floodplain and floodway Map No. 43-ML 26 and Map No. 43-ML 27 upon completion of the Mission Village TTM #61105 project along the south bank of the Santa Clara River. With LACDPW staff review and approval of this document, the ML Map Revision (Map No. 43-ML 26 and Map No. 43-ML 27) will be presented to the Los Angeles County Board of Supervisors for Acceptance of Revision.


SANTA CLARA RIVER
FLOODWAY MAP
FROM 5800' U/S OF CHIQUITO CYN.
TO 6000' U/S OF CASTAIC CREEK
Los Angeles County Department of Public Works
ADOPTED BY BOARD OF SUPERVISORS
LEGEND
CAPITAL FLOOD PLAIN BOUNDARY
FLOODWAY BOUNDARY
WATER SURFACE ELEVATION
MARK R. ELLENA
RON LACAYO
JULY 85
1" = 100'
43-ML26

FIGURE 3A


MAGIC MOUNTAIN AMUSEMENT PARK
PARKING AREA
CASTAIC CANYON ROAD
OLD ROAD
GOLDEN STATE FREEWAY
LEGEND
CAPITAL FLOOD PLAIN BOUNDARY
FLOODWAY BOUNDARY
WATER SURFACE ELEVATIONS
ADOPTED BY BOARD OF SUPERVISORS
ON AUGUST 6, 1985
ORDINANCE NO. 85-0134
Revised
References
MARK R. ELLENA
RON LACAYO
Los Angeles County Department of Public Works
SANTA CLARA RIVER
FLOODWAY MAP
FROM 6000' U/S OF CASTAIC CREEK TO
2100' D/S OF GOLDEN STATE FWY
JULY 85

FIGURE 3B



NO.	BY	DATE		DATE	APP.

JOB

MISSION VILLAGE
TTM #61105
ML MAP REVISION

LA COUNTY CA

PACE
PACIFIC ADVANCED CIVIL ENGINEERING
17520 NEWHOPE STREET, SUITE 200
FOUNTAIN VALLEY, CA 92708
PH (714) 481-7300 FAX (714) 481-7299

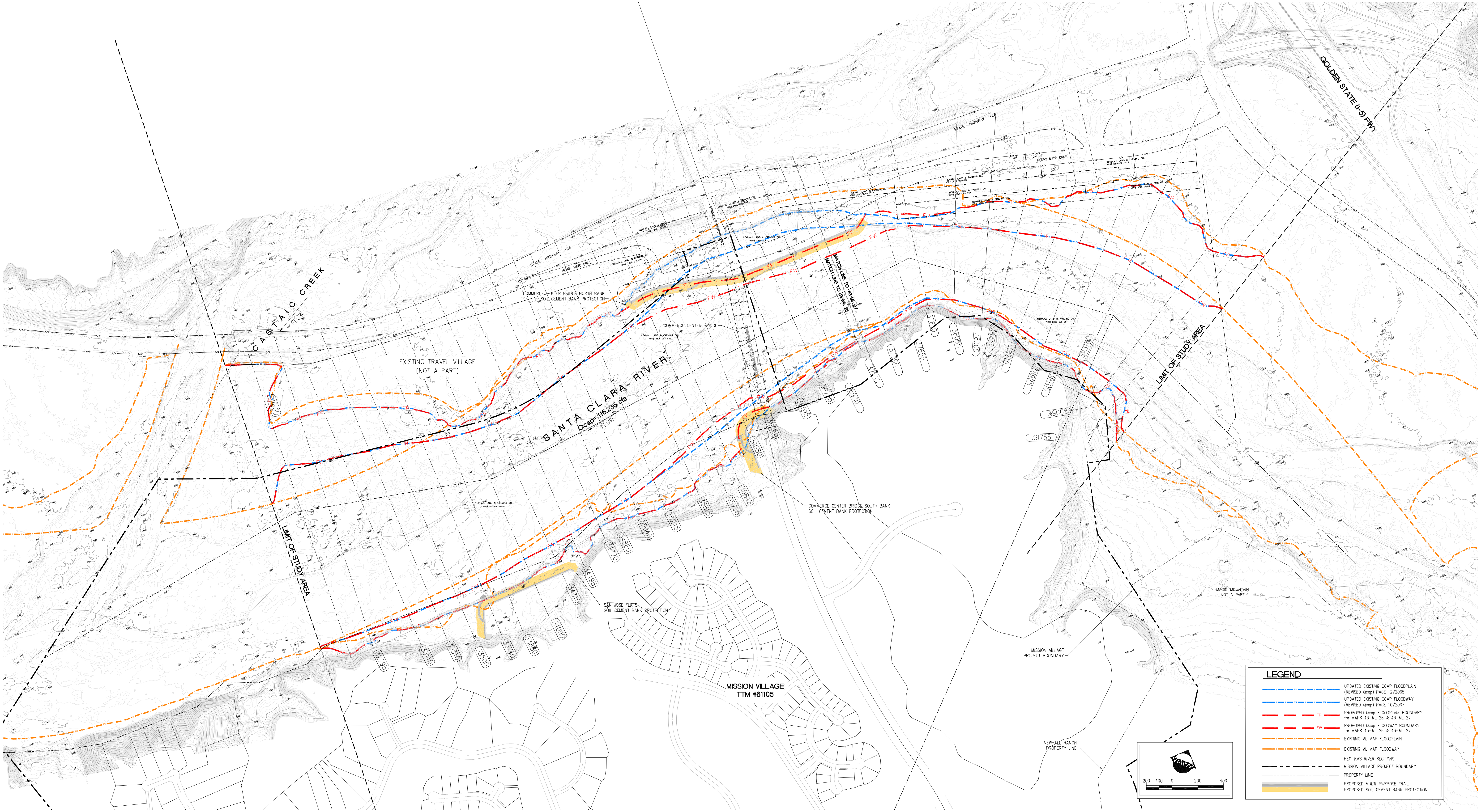
SCALE	1:200
DESIGNED	CVH
DRAWN	CVH
CHECKED	MEK
DATE	NOV. 2007
JOB NO.	8611E

TITLE

EXISTING ML & UPDATED EXISTING FLOODPLAIN AND FLOODWAY

FIGURE
4

JOB NO. 8611-E



NO.	BY	DATE		DATE	APP.

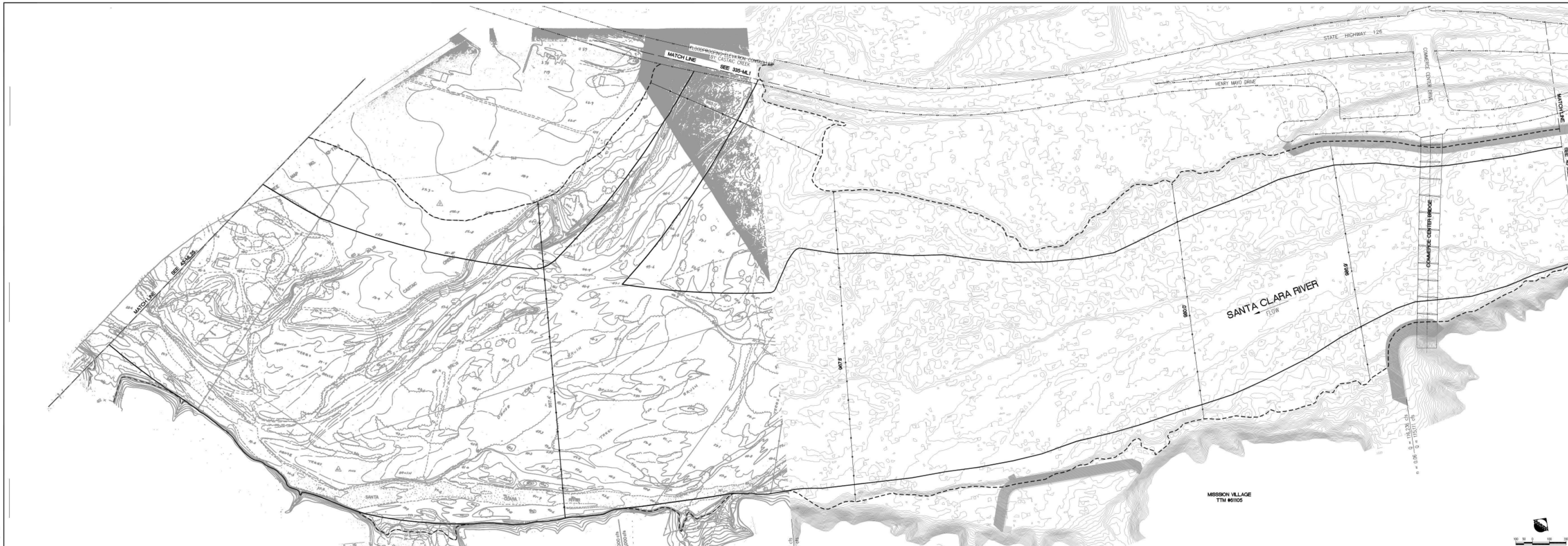
JOB
MISSION VILLAGE
TTM #61105
ML MAP REVISION
LA COUNTY CA

PACE
PACIFIC ADVANCED CIVIL ENGINEERING
17520 NEWHOPE STREET, SUITE 200
FOUNTAIN VALLEY, CA 92708
PH (714) 481-7300 FAX (714) 481-7299

SCALE	1:200
DESIGNED	CVH
DRAWN	CVH
CHECKED	MEK
DATE	NOV. 2007
JOB NO.	8611E

TITLE
UPDATED EXISTING AND PROPOSED FLOODPLAIN AND FLOODWAY

FIGURE
5
JOB NO. 8611-E



LEGEND

PROPOSED CAPITAL FLOODWAY

PROPOSED CAPITAL FLOODPLAIN

WATER SURFACE ELEVATIONS

ADOPTED BY BOARD OF SUPERVISORS
DATE AUGUST 6, 1985
ORDINANCE NO. 85-0134

REVISED | REFERENCES

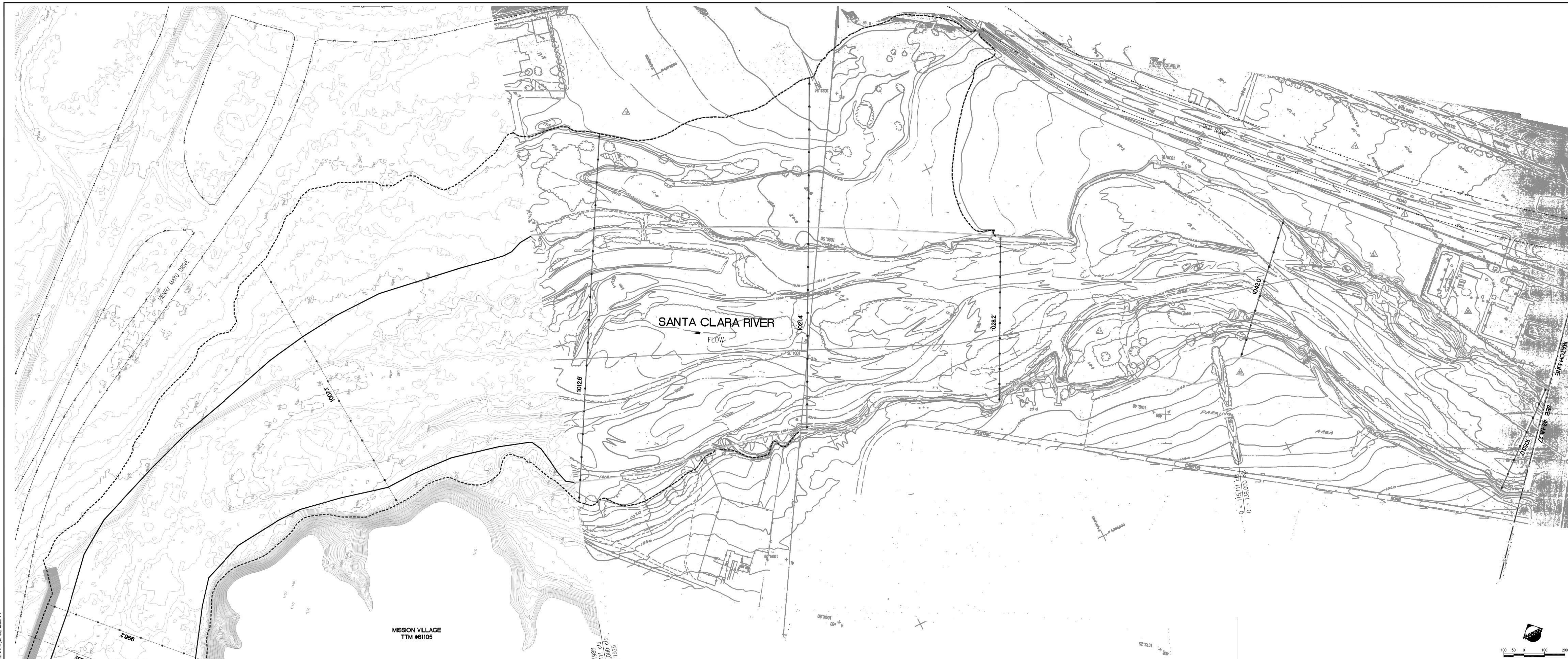
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SANTA CLARA RIVER

FLOODWAY MAP
FROM 5800' U/S OF CHIQUITO CYN.
TO 6000' U/S OF CASTAIC CREEK

DATE: OCT. 07 | SCALE: 1" = 100'

No. 43-ML 26



LEGEND

- PROPOSED CAPITAL FLOODWAY
- PROPOSED CAPITAL FLOODPLAIN
- WATER SURFACE ELEVATIONS

ADOPTED BY BOARD OF SUPERVISORS
DATE AUGUST 6, 1985
ORDINANCE NO. 85-0134

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SANTA CLARA RIVER

FLOODWAY MAP
FROM 6000' U/S OF CASTAIC CREEK TO
2100' D/S OF GOLDEN STATE FWY

REVISED	REFERENCES	PREPARED BY: PACIFIC ADVANCED CIVIL ENG. INC.	RECOMMENDED BY: DIVISION ENGINEER	DATE: OCT. 07	SCALE: 1"= 100'
		CHECKED BY	APPROVED BY: CHIEF ENGINEER	No. 43-ML 27	
		PROJECT ENGINEER MARK KREBS R.C.E. 49292			

Appendix A

PACE

Appendix A

LADPW Approval Letter for Newhall Ranch Fluvial Analysis Report, March 6, 2006

DONALD L. WOLFE, Director

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
www.ladpw.org

COPY

ADDRESS ALL CORRESPONDENCE TO:
P.O BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

April 18, 2006

IN REPLY PLEASE
REFER TO FILE: LD-0

Mr. Mark Subbotin
Vice President of Community Development
Newhall Land/Lennar
23823 Valencia Boulevard
Valencia, CA 91355-2194

Dear Mr. Subbotin:

HEC-RAS AND PHASE 1 FLUVIAL ANALYSIS FOR:
CASTAIC CREEK I-5 TO SANTA CLARA RIVER CONFLUENCE
SANTA CLARA RIVER I-5 TO VENTURA COUNTY LINE

This letter has been prepared to memorialize and clarify the conclusions and approvals of the County of Los Angeles Department Public Works relative to the completed review of the following reports prepared by PACE, Inc.

- Newhall Ranch Santa Clara River HEC-RAS Modeling Report dated December 2005 (I-5 to Ventura County Line).
- Castaic Creek HEC-RAS Modeling Report dated December 2005 (I-5 to Hwy 126).
- Newhall Ranch–Santa Clara River Phase 1 Fluvial Study dated March 6, 2006, (final date pending).
- Castaic Creek Phase 1 Fluvial Study dated January 20, 2006.

Based on our review of the reports provided to date, we will regard the following items as approved:

1) Reestablishment of a revised Capital Floodplain HEC-RAS model and water surface profile for design and ML map revision (n=0.06 per the approved reports).

2) The proposed bank protection horizontal alignment, as presented in the reports, for Newhall Ranch–Santa Clara River (I-5 to Ventura County line) and Castaic Creek (I-5 to Santa Clara River) confluence.

3) The top and toe elevations of the bank protection for Castaic Creek from I-5 to the Santa Clara River confluence and for the Santa Clara River from I-5 to the Chiquito Canyon Creek confluence (Landmark, Entrada, Mission Village, and Commerce Center). Refer to the enclosed exhibit for proposed bank protection

locations. The approved toe-down depth for these proposed bank protection projects is the greater (deeper) of the Los Angeles County Hydraulic Design Manual or the Los Angeles County Hydrology and Sedimentation Manual (utilizing the results of the Phase 1 Fluvial Study long-term aggradations/degradation analysis and the SAM model general degradation modeling results). In addition, the top of bank elevation for these proposed projects is as determined by the results of the approved Phase 1 Fluvial Analysis.

The remaining proposed projects within Newhall Ranch, where the top and toe elevations are not approved, will require further analysis of the Newhall Ranch Development within the tributary drainage areas and the evaluation of the resulting fluvial impacts (if any) to the Santa Clara River as related to changes in tributary sediment delivery pre- versus post-development condition.

The final design and permitting for each individual development requiring bank protection will be based upon the final results as concluded in the aforementioned reports and the Phase 2 Fluvial Studies. The procedure for the use of these reports and bank protection project construction phasing will be as follows:

1) Conceptual Design Report–Public Works approval
2) Hydrology (Final Design Report)–Public Works approval
3) Construction Plans and Specifications–Public Works approval
4) County ML Map Revisions–County Conditional and Final Approval

Please confirm that you are in agreement with the conclusions and approvals noted above. If you have any further questions, please contact Mr. Steven Sheridan of my staff at (626) 458-7151.

Very truly yours,

DONALD L. WOLFE
Director of Public Works

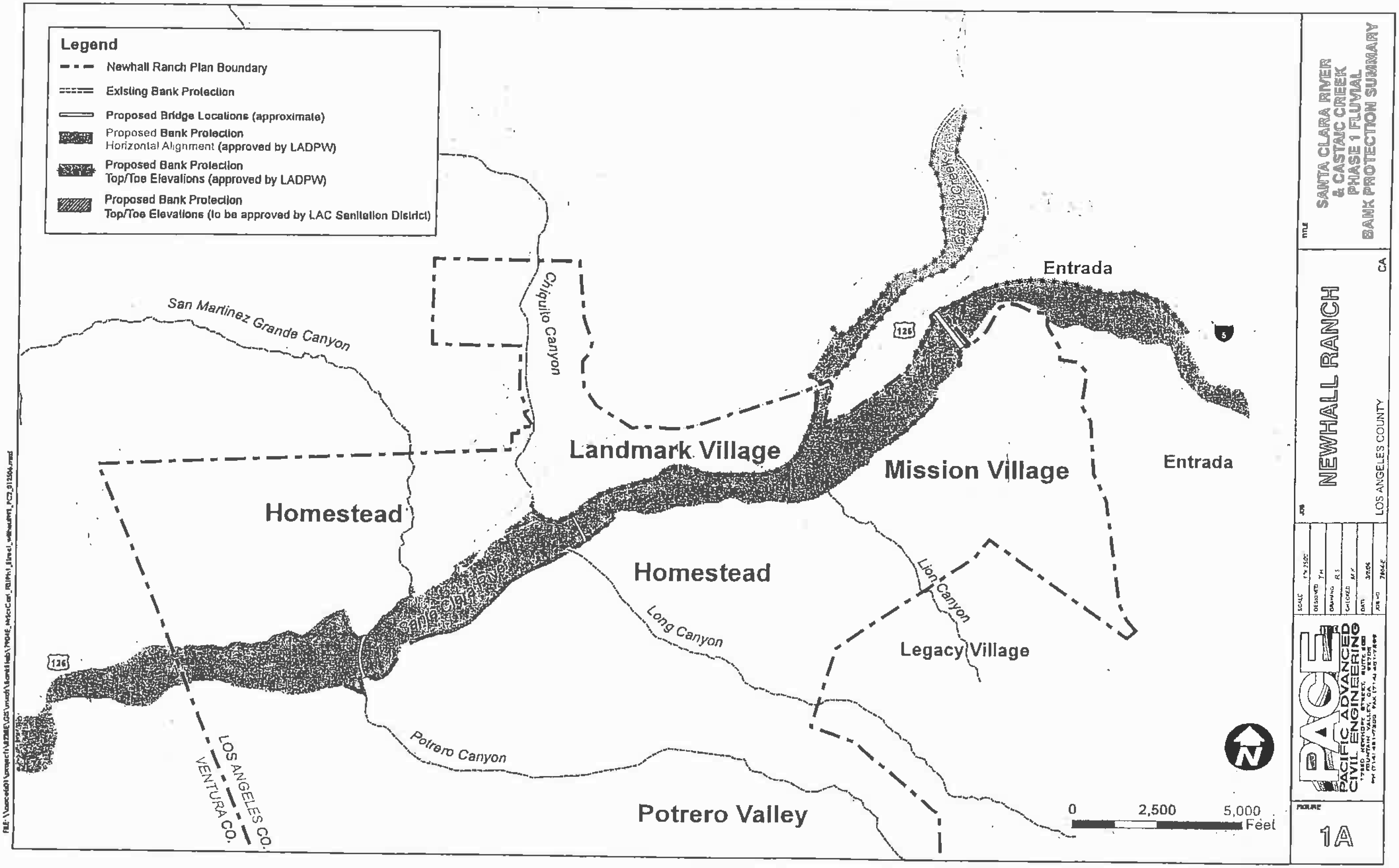
Dennis Hunter

DENNIS HUNTER
Assistant Deputy Director
Land Development Division

SDS:la
P:\ldpub\NEWHALL\Fluvial Analysis - Phase 11.doc

Enc.

cc: PACE Engineering (Mark Krebs)



Legend
Newhall Ranch Plan Boundary
Existing Bank Protection
Proposed Bridge Locations (approximate)
Proposed Bank Protection Horizontal Alignment (approved by LADPW)
Proposed Bank Protection Top/Toe Elevations (approved by LADPW)
Proposed Bank Protection Top/Toe Elevations (to be approved by LAC Sanitation District)
San Martinez Grande Canyon
Chiquito Canyon
Castaic Creek
Entrada
126
5
Landmark Village
Mission Village
Entrada
Homestead
Homestead
Santa Clara River
Lion Canyon
Long Canyon
Legacy Village
126
Potrero Canyon
LOS ANGELES CO.
VENTURA CO.
Potrero Valley
0
2,500
5,000
Feet
N
SANTA CLARA RIVER
& CASTAIC CREEK
PHASE 1 FLUVIAL
BANK PROTECTION SUMMARY
NEWHALL RANCH
CA
LOS ANGELES COUNTY
PACE
PACIFIC ADVANCED CIVIL ENGINEERING
FIGURE
1A

Appendix B

Appendix B

Updated Existing Conditions Capital Floodplain and Floodway, n = 0.060

HEC-RAS Plan: Ex.060 FP River: Reach #1 Reach: SCR Profile: Rev BB FP

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SCR	39755	Rev BB FP	115111.00	994.00	1010.68	1007.49	1012.19	0.006155	10.48	12573.89	1464.82	0.52
SCR	39605	Rev BB FP	115111.00	993.00	1009.99	1005.91	1011.30	0.004899	9.80	13358.61	1367.83	0.47
SCR	39310	Rev BB FP	115111.00	992.00	1008.42	1004.44	1009.75	0.005131	10.14	13702.08	1594.90	0.48
SCR	39100	Rev BB FP	115111.00	990.00	1007.78	1002.13	1008.77	0.003469	8.44	15312.17	1495.33	0.40
SCR	38925	Rev BB FP	115111.00	989.50	1007.06	1001.39	1008.12	0.003746	8.56	14535.44	1360.04	0.41
SCR	38710	Rev BB FP	115111.00	988.00	1006.13	1000.08	1007.30	0.003772	8.91	13799.78	1209.15	0.42
SCR	38475	Rev BB FP	115111.00	986.00	1003.61	999.95	1005.93	0.008113	12.49	9836.33	947.67	0.60
SCR	38300	Rev BB FP	115111.00	985.50	1002.69	997.52	1004.58	0.005876	11.09	10671.87	923.98	0.52
SCR	38065	Rev BB FP	115111.00	984.00	1001.25	995.71	1003.20	0.005703	11.21	10350.30	803.29	0.51
SCR	37810	Rev BB FP	115111.00	983.00	997.73	995.23	1000.99	0.012373	14.50	7972.51	712.39	0.73
SCR	37655	Rev BB FP	115111.00	982.00	995.14	994.09	998.72	0.016921	15.21	7638.91	802.91	0.84
SCR	37390	Rev BB FP	115111.00	981.00	994.07	989.88	995.63	0.005931	10.17	11636.90	1018.72	0.51
SCR	37135	Rev BB FP	115111.00	980.00	992.64	988.63	994.06	0.005874	9.80	12138.16	1107.16	0.50
SCR	36930	Rev BB FP	115111.00	978.00	991.76	987.06	992.96	0.004476	9.09	13360.45	1195.47	0.45
SCR	36735	Rev BB FP	115111.00	977.00	990.84	986.55	992.05	0.004773	9.10	13287.79	1233.52	0.46
SCR	36515	Rev BB FP	115111.00	975.00	990.03	985.42	991.06	0.003962	8.38	14476.75	1343.55	0.43
SCR	36265	Rev BB FP	115111.00	974.00	988.93	984.77	989.98	0.004748	8.24	13990.37	1382.63	0.46
SCR	36080	Rev BB FP	116236.00	973.00	988.00	984.06	989.04	0.005308	8.22	14198.20	1480.62	0.46
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SCR	34860	Rev BB FP	116236.00	966.00	979.96	977.39	981.49	0.008091	9.93	11795.28	1397.48	0.59
SCR	34720	Rev BB FP	116236.00	965.50	978.97	976.19	980.35	0.007306	9.42	12382.70	1434.60	0.56
SCR	34495	Rev BB FP	116236.00	964.00	977.44	974.45	978.81	0.006536	9.68	12740.57	1425.59	0.53
SCR	34310	Rev BB FP	116236.00	963.00	976.28	973.01	977.65	0.005765	10.00	12869.29	1322.41	0.51
SCR	34090	Rev BB FP	116236.00	962.00	974.96	971.64	976.32	0.006486	9.37	12407.46	1303.60	0.54
SCR	33880	Rev BB FP	116236.00	960.00	973.59	970.46	974.93	0.006786	9.30	12499.12	1427.95	0.55
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SCR	33500	Rev BB FP	116236.00	958.00	971.32	968.41	972.43	0.005879	8.91	14259.53	1707.38	0.49
SCR	33310	Rev BB FP	116236.00	957.00	970.43	967.01	971.36	0.004940	7.75	15005.28	1770.85	0.47
SCR	33115	Rev BB FP	116236.00	956.00	969.56	965.60	970.37	0.004680	7.21	16114.27	1830.33	0.43
SCR	32795	Rev BB FP	116236.00	954.00	967.78	964.63	968.76	0.005440	7.95	14612.02	1842.51	0.50
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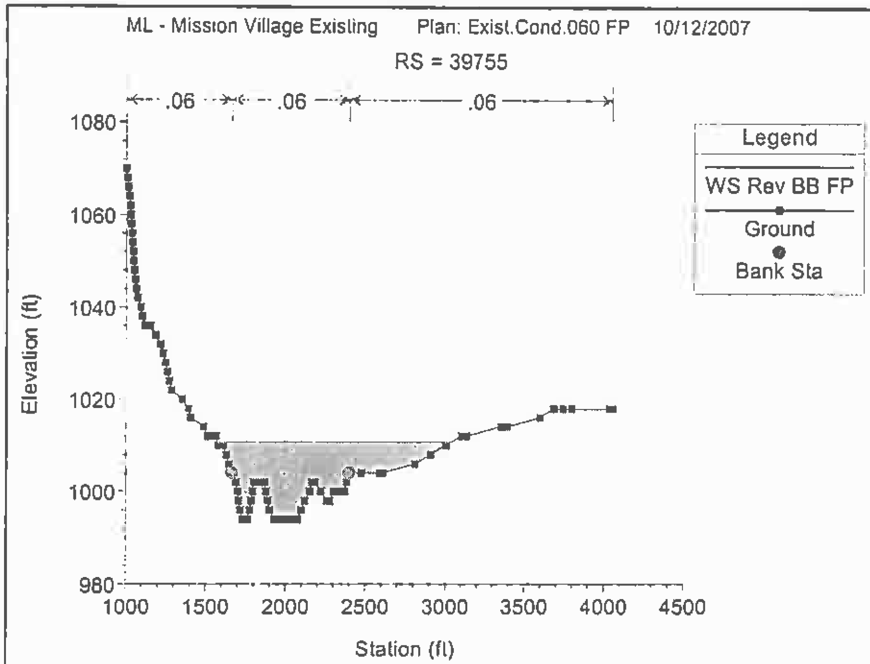

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Bank Sta
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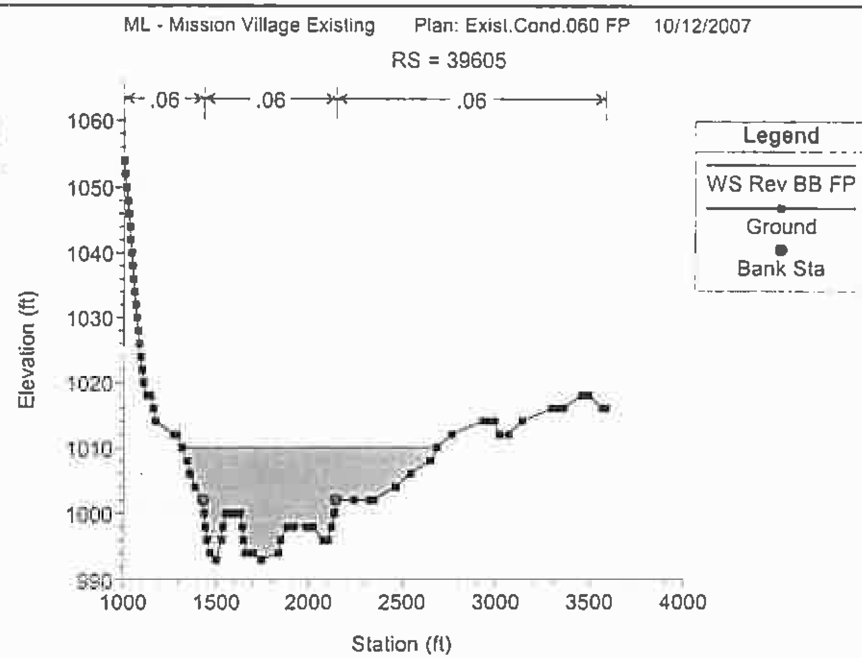
Station (ft)



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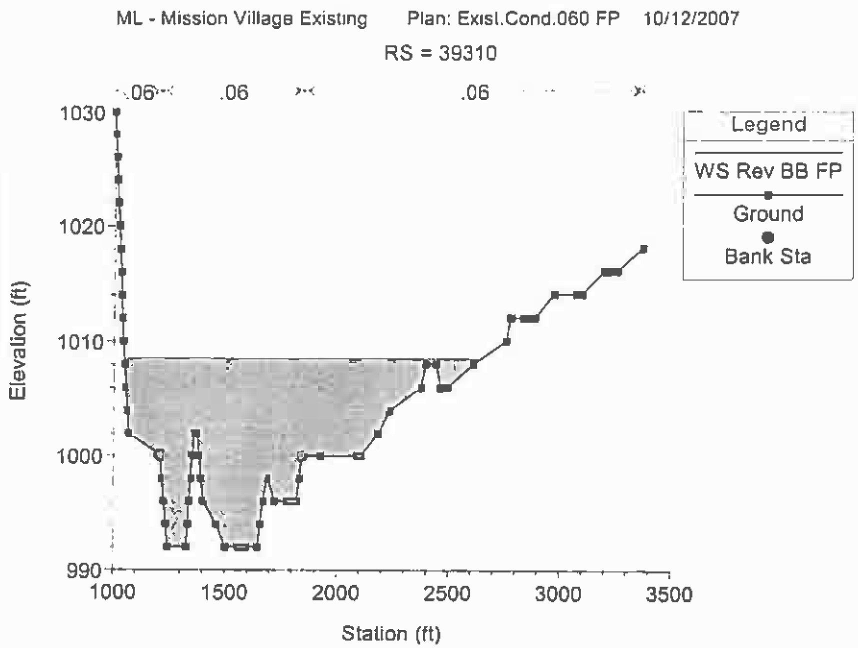

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Bank Sta
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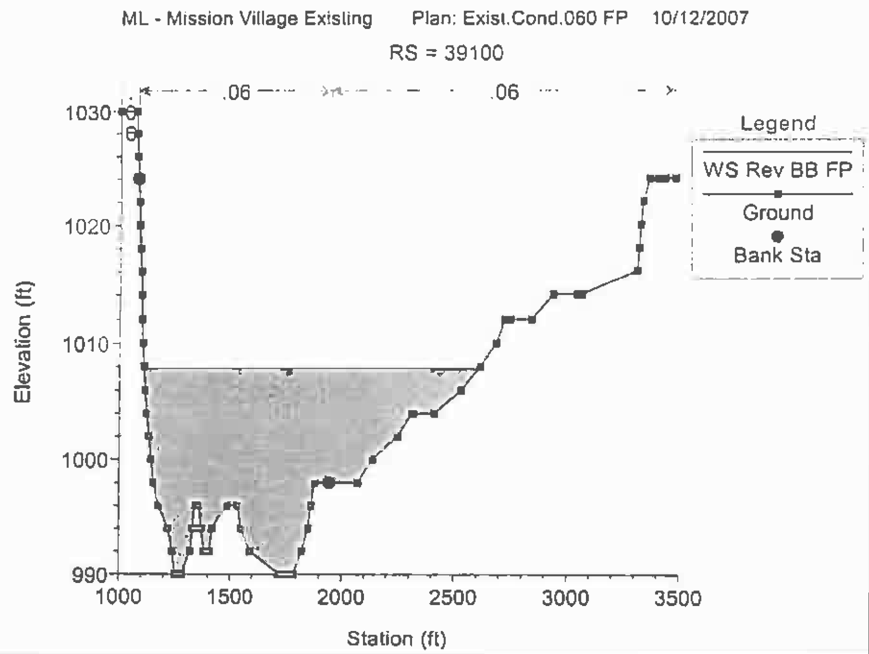
Station (ft)



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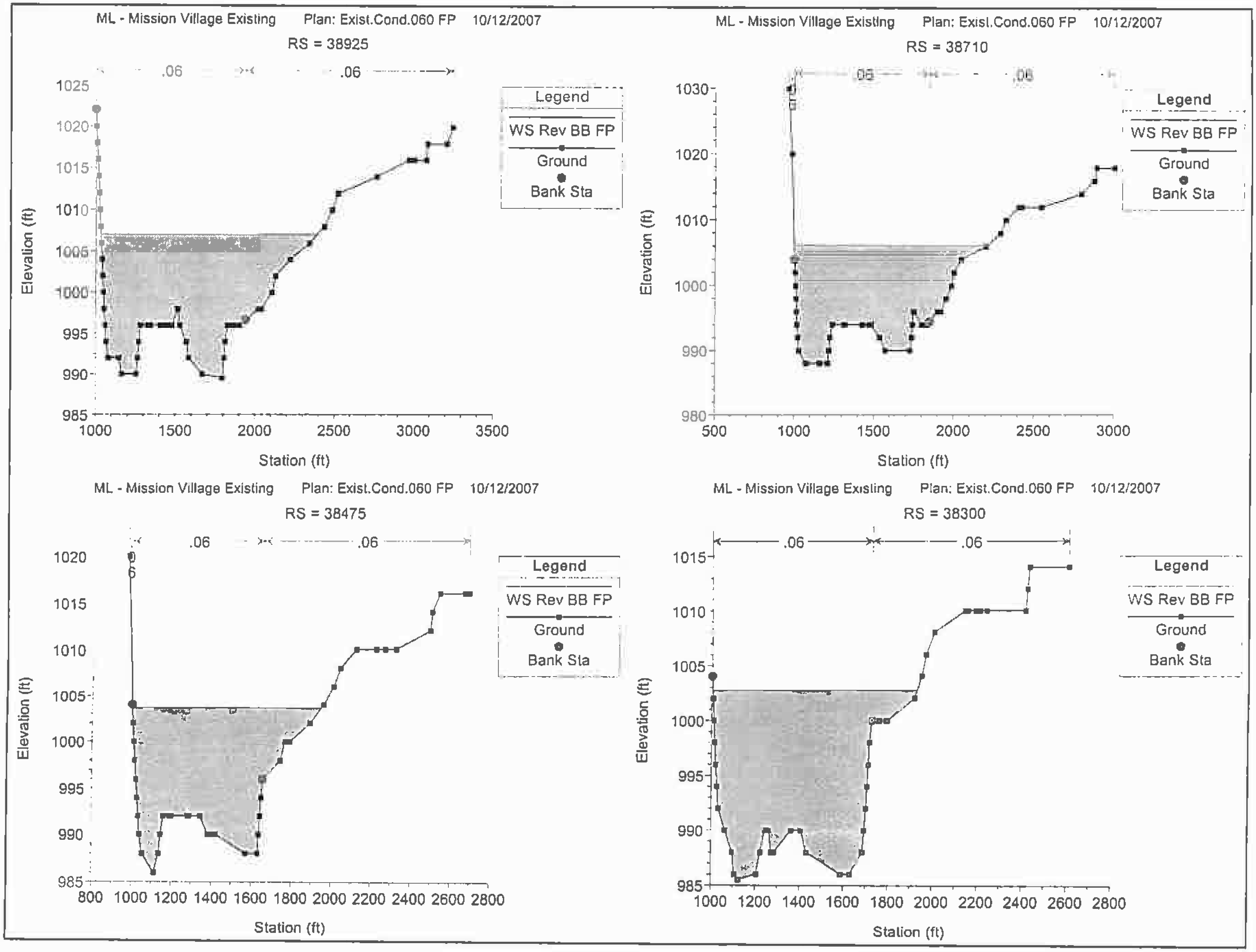
Station (ft)



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Bank Sta
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Station (ft)
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Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Ground
Bank Sta
Elevation (ft)
Station (ft)
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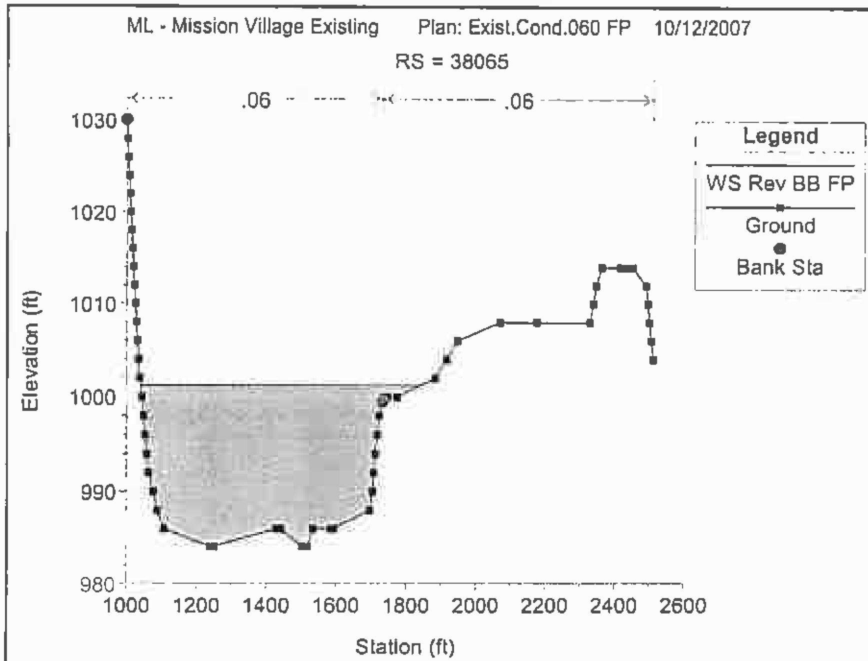
Bank Sta
Elevation (ft)
Station (ft)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10/12/2007
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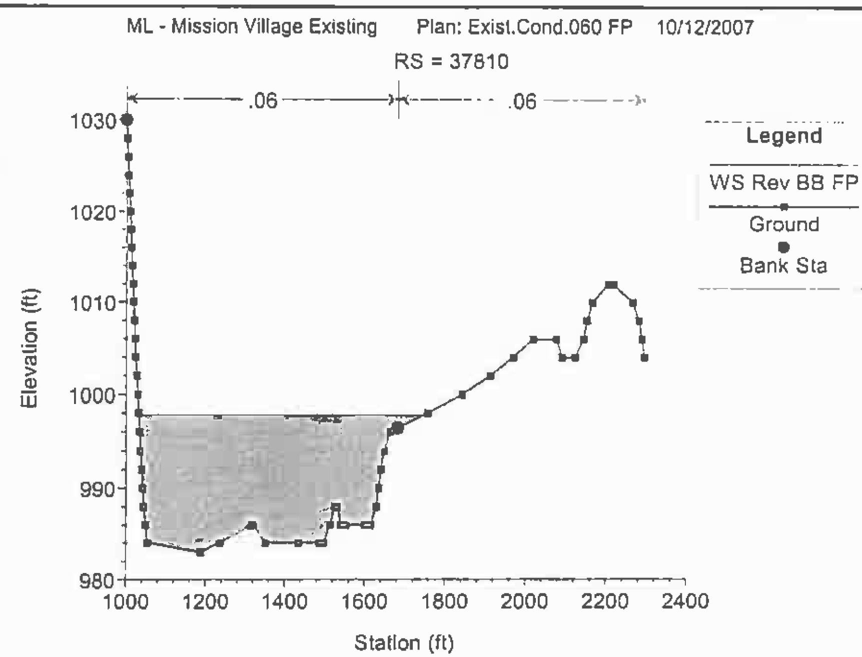
Station (ft)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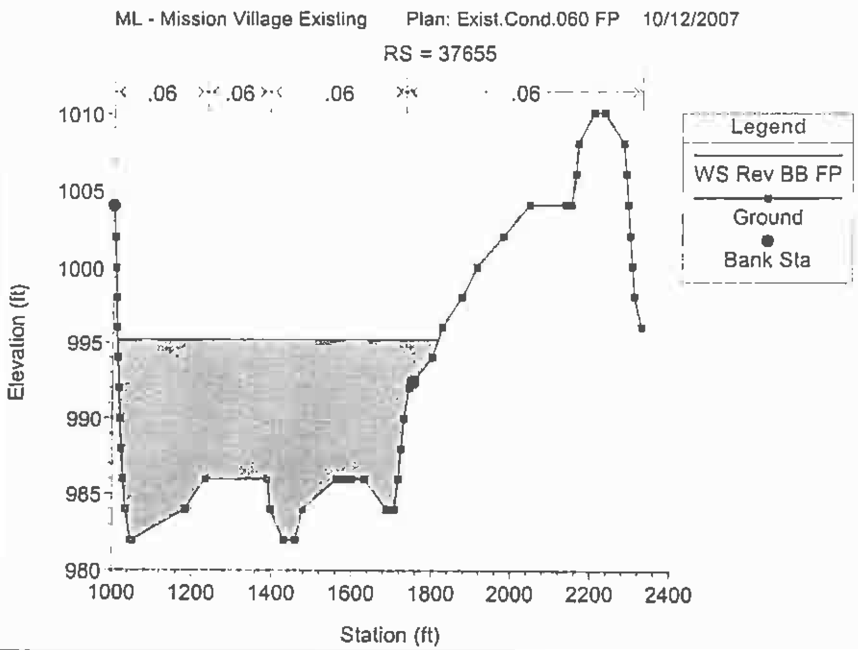
Station (ft)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Bank Sta
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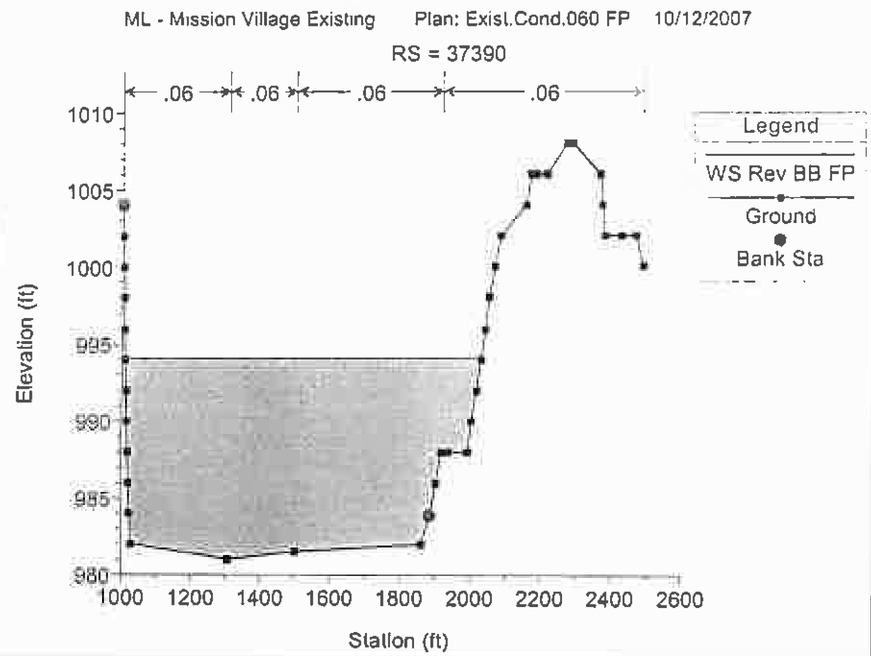
1600
1800
2000
2200
2400
Station (ft)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Bank Sta
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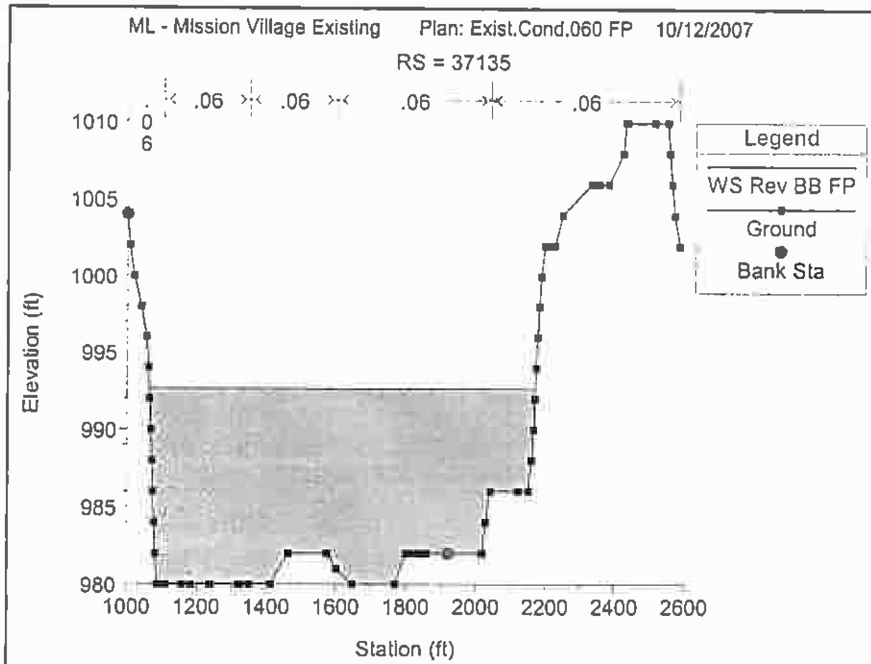
1600
1800
2000
2200
2400
2600
Station (ft)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Ground
Bank Sta
Elevation (ft)
Station (ft)
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1000
995
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1600
1800
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2200
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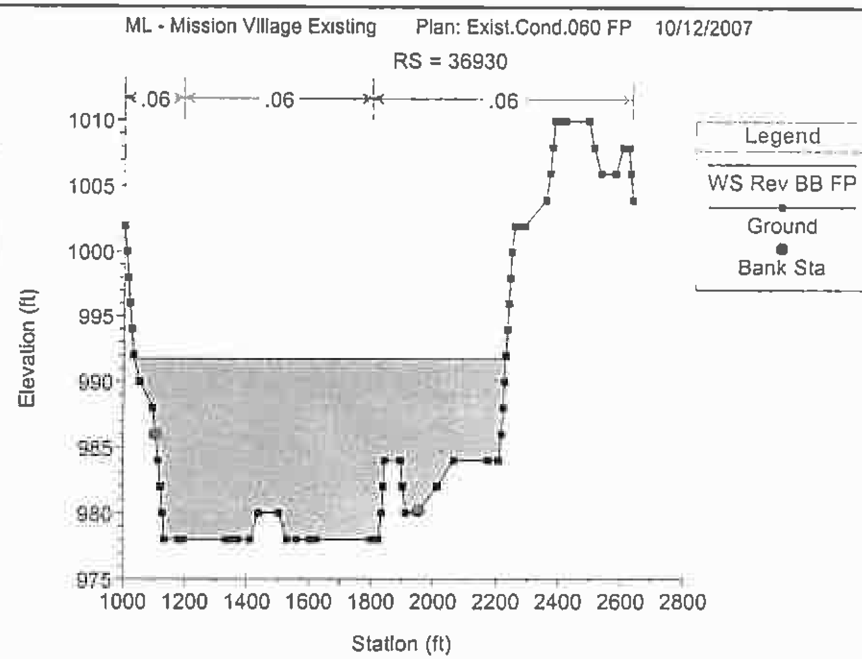
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Bank Sta
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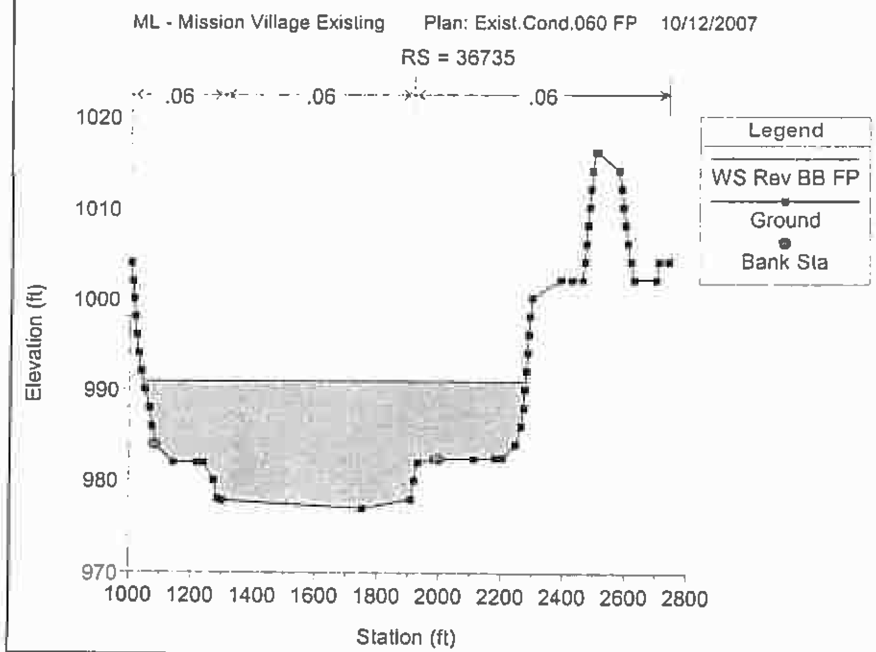
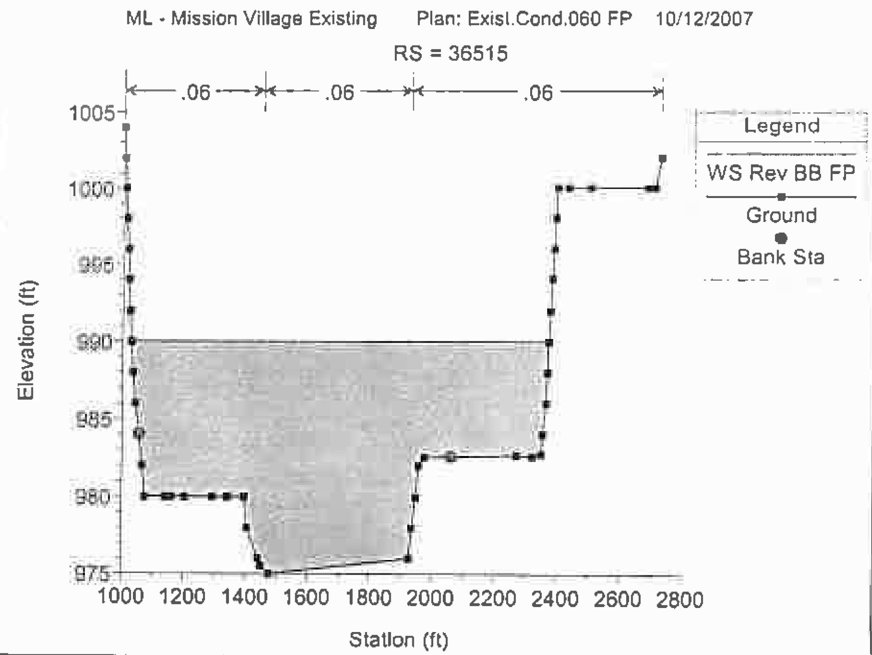
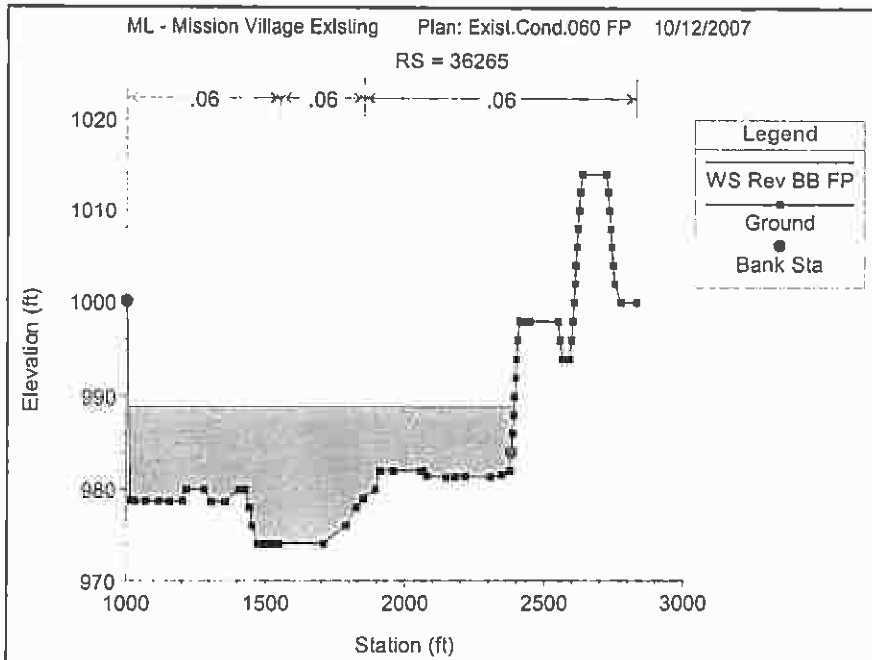
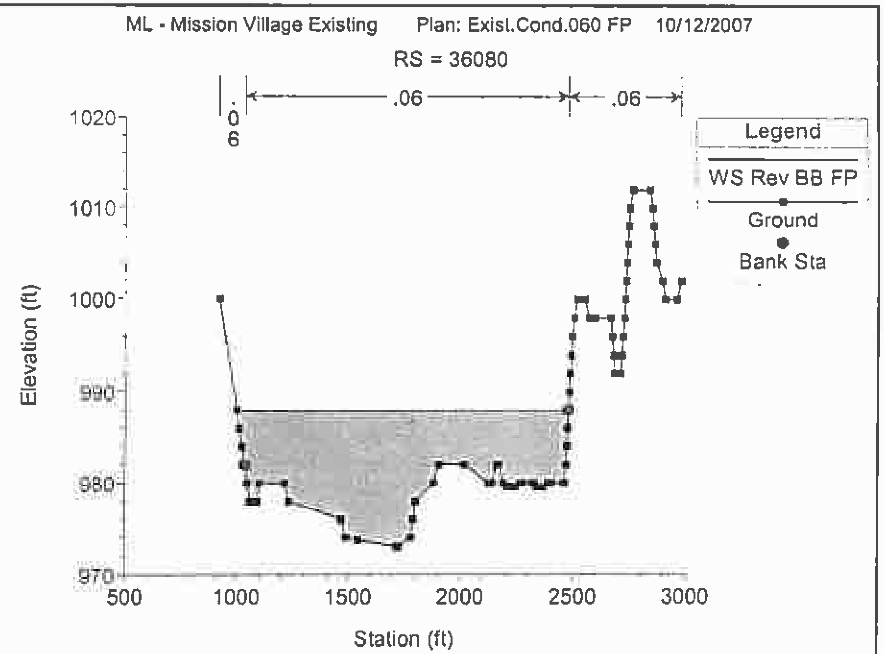
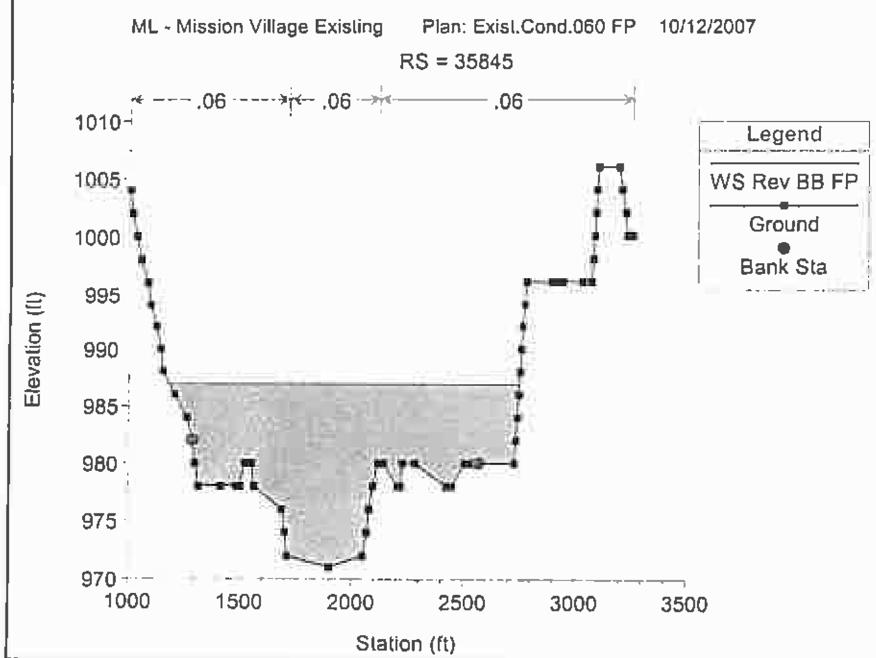

ML - Mission Village Existing
Plan: Exist.Cond.060 FP
10/12/2007
RS = 36735
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1020
1010
1000
990
980
970
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800


ML - Mission Village Existing
Plan: Exist.Cond.060 FP
10/12/2007
RS = 36515
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1005
1000
995
990
985
980
975
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800


ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 36265
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
1020
1010
1000
990
980
970
1000
1500
2000
2500
3000
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 36080
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
1020
1010
1000
990
980
970
500
1000
1500
2000
2500
3000
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 35845
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
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995
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975
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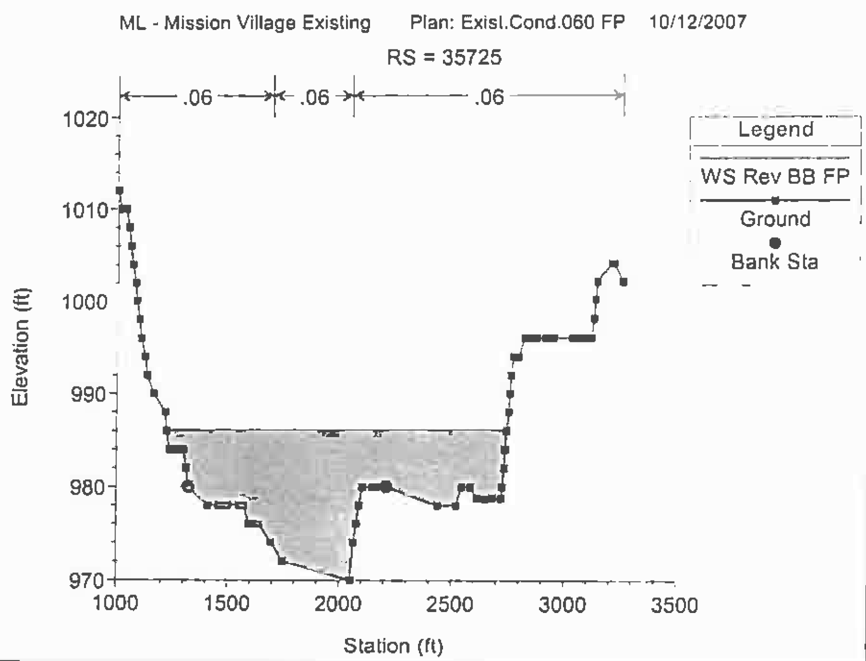
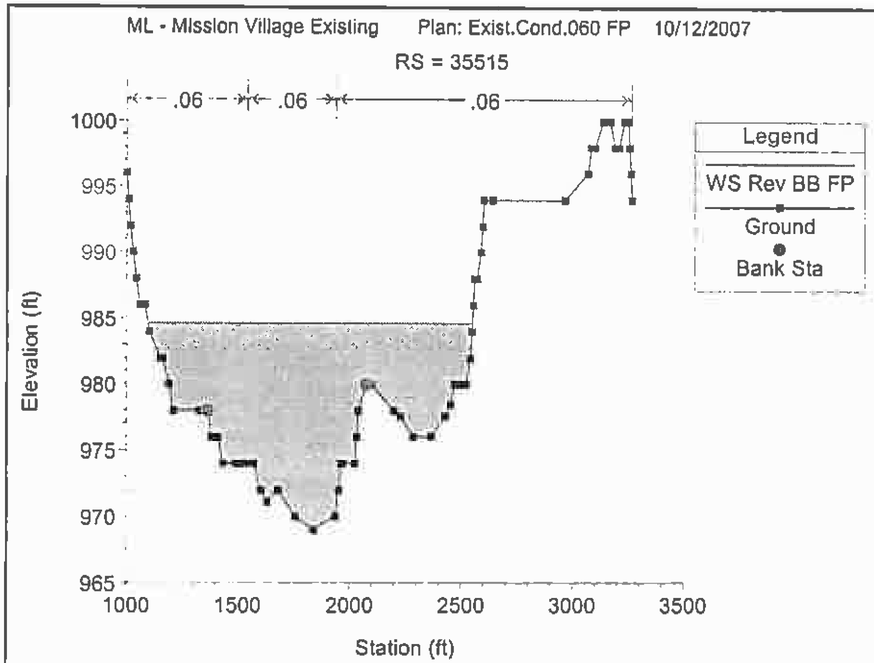
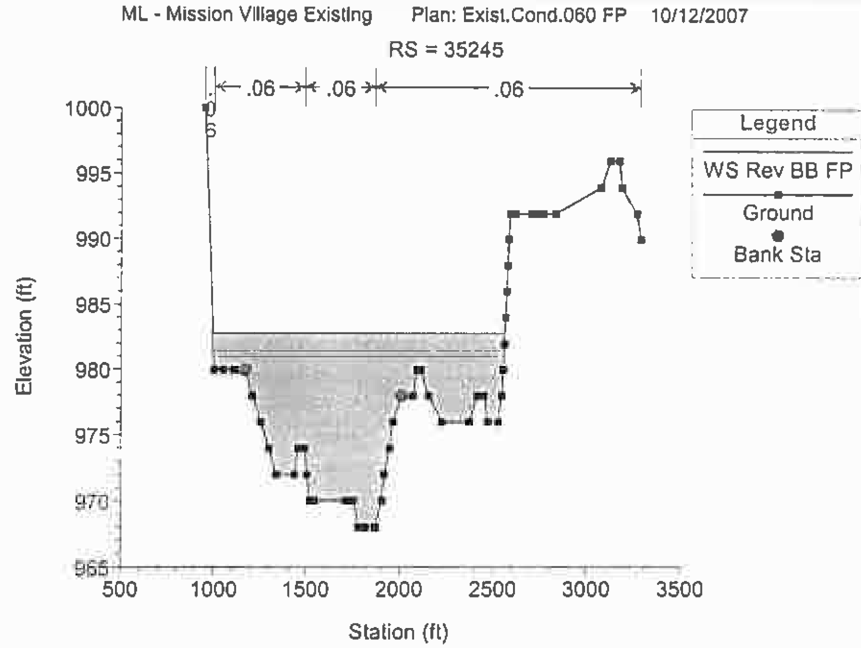
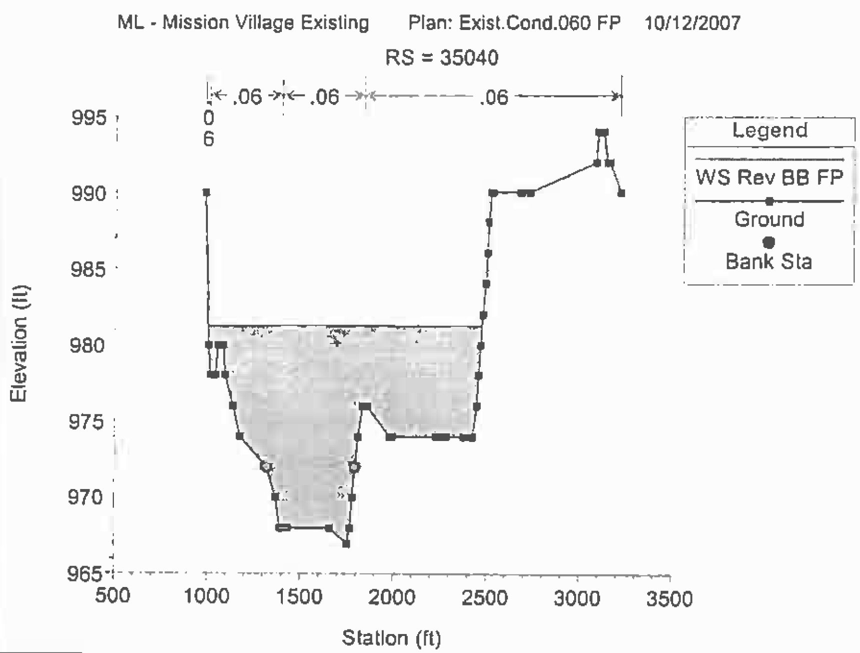
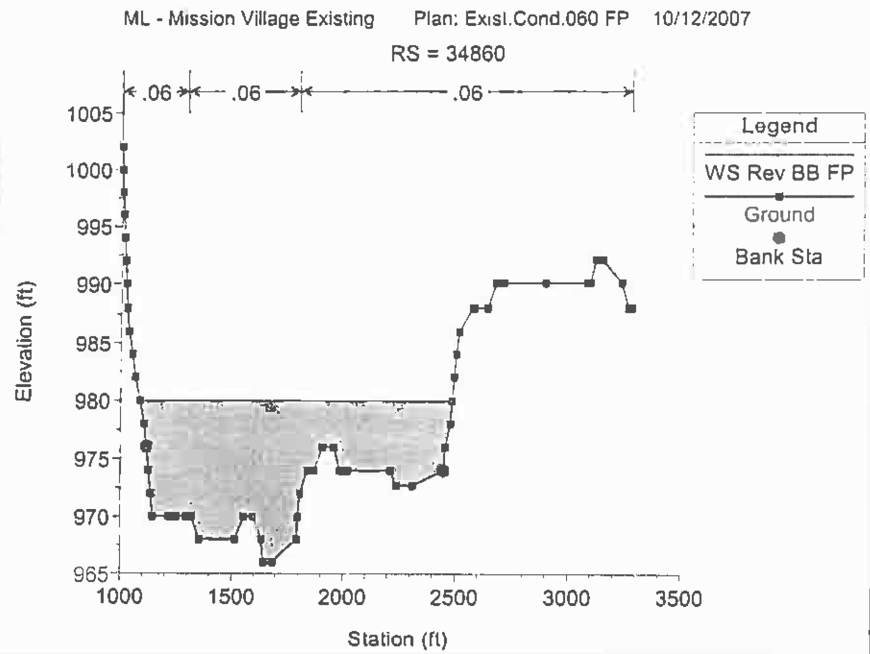
2500
3000
3500
Station (ft)

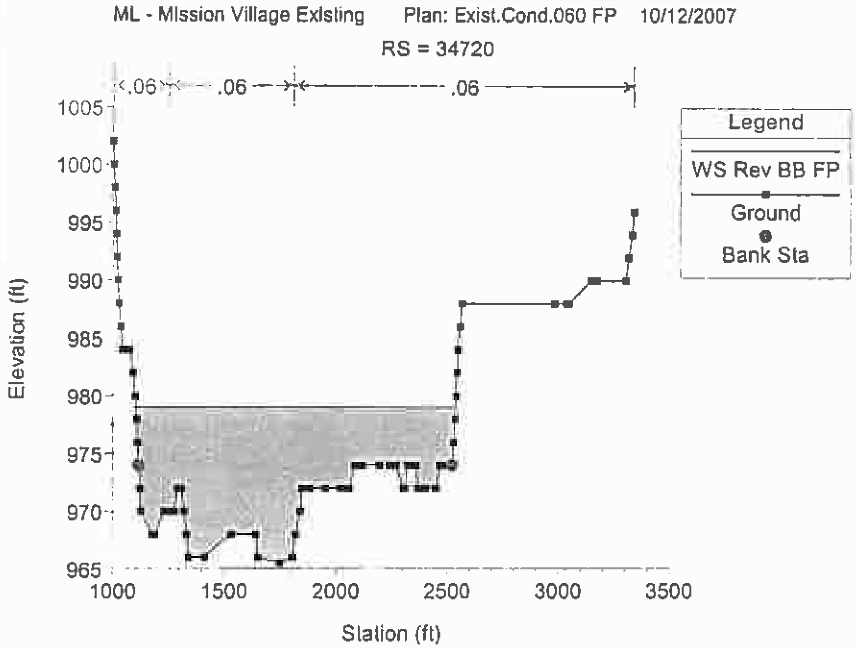

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 35725
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
1020
1010
1000
990
980
970
1000
1500
2000
2500
3000
3500
Station (ft)

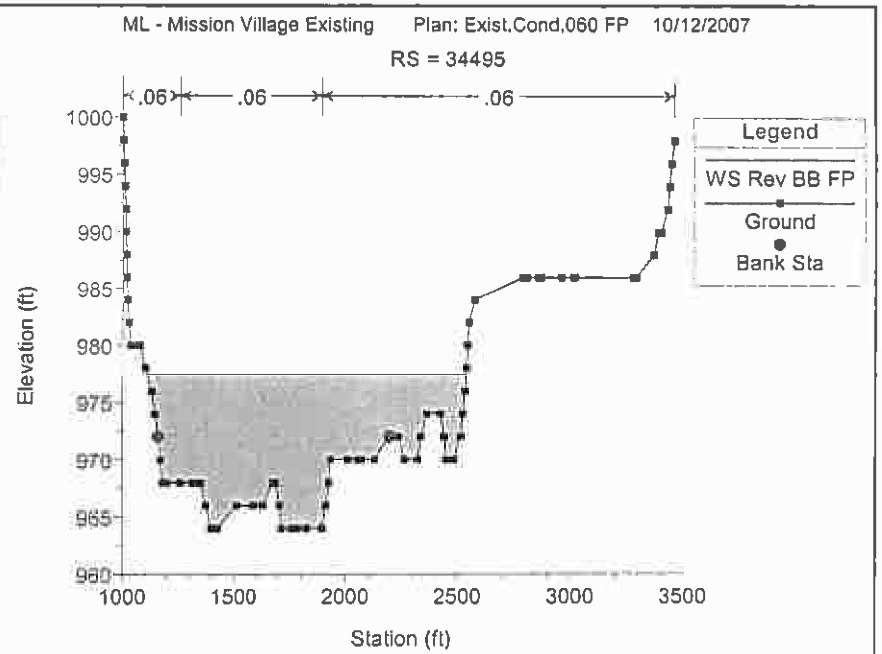

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 35515
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500

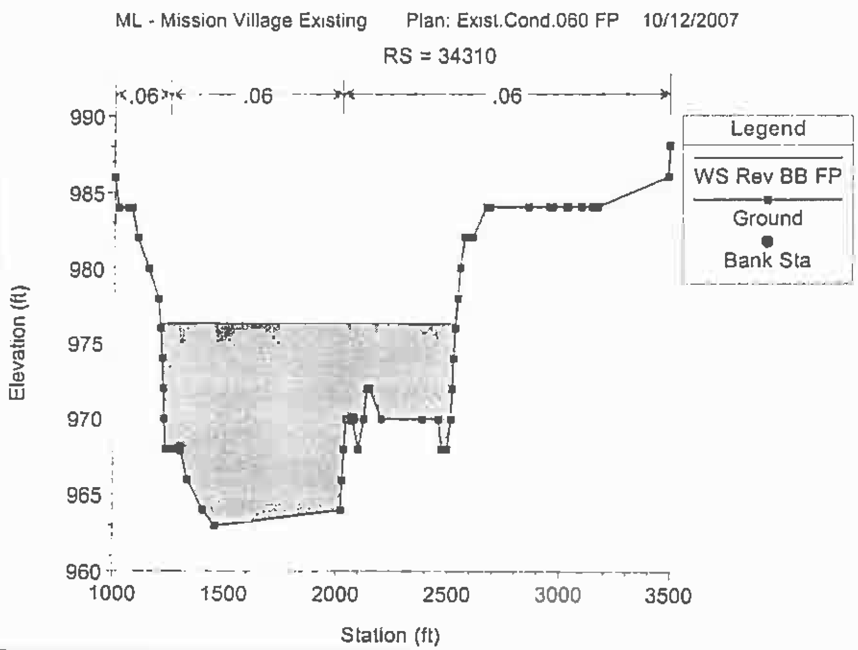

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 35245
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
500
1000
1500
2000
2500
3000
3500

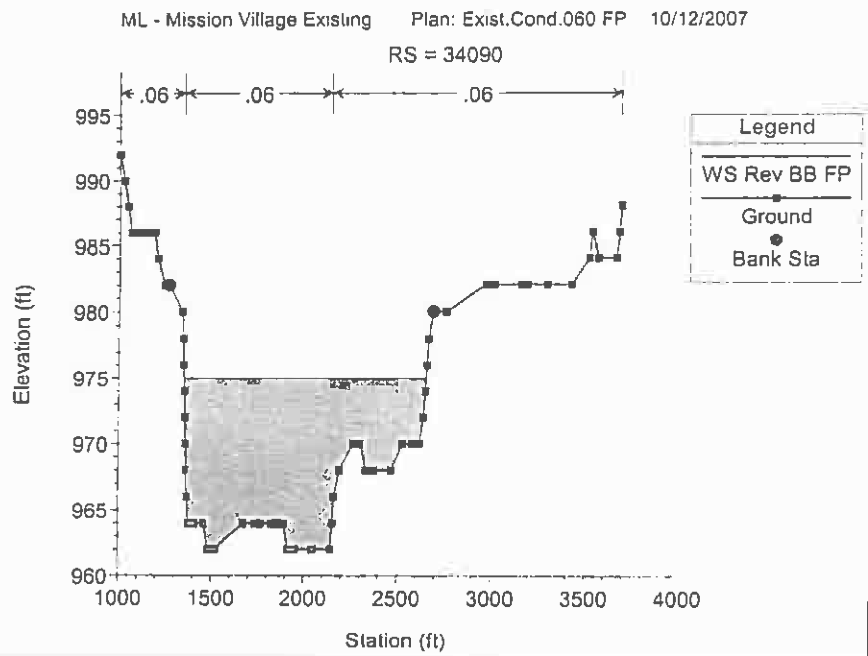

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 35040
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
995
990
985
980
975
970
965
500
1000
1500
2000
2500
3000
3500

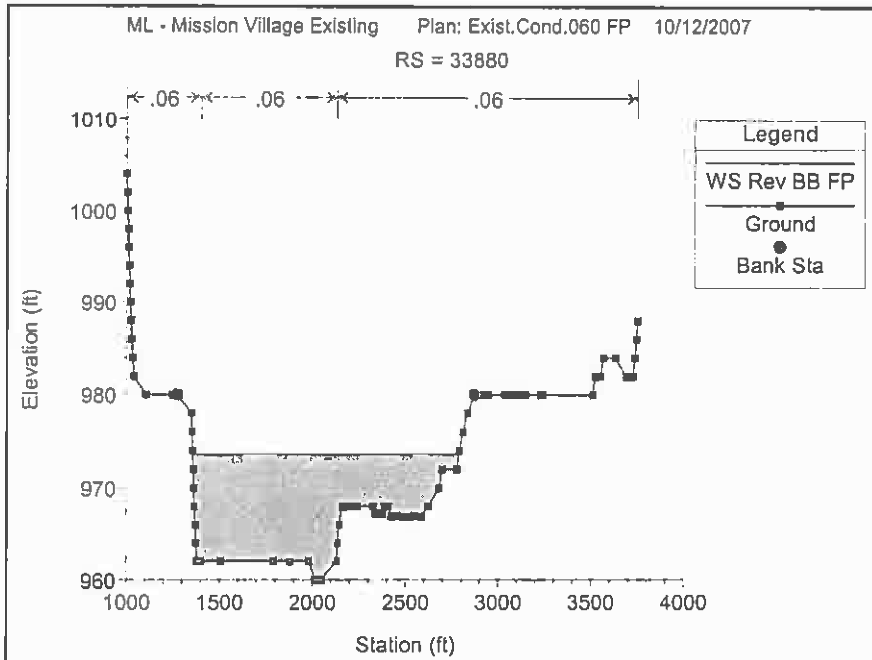

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 34860
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1005
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500

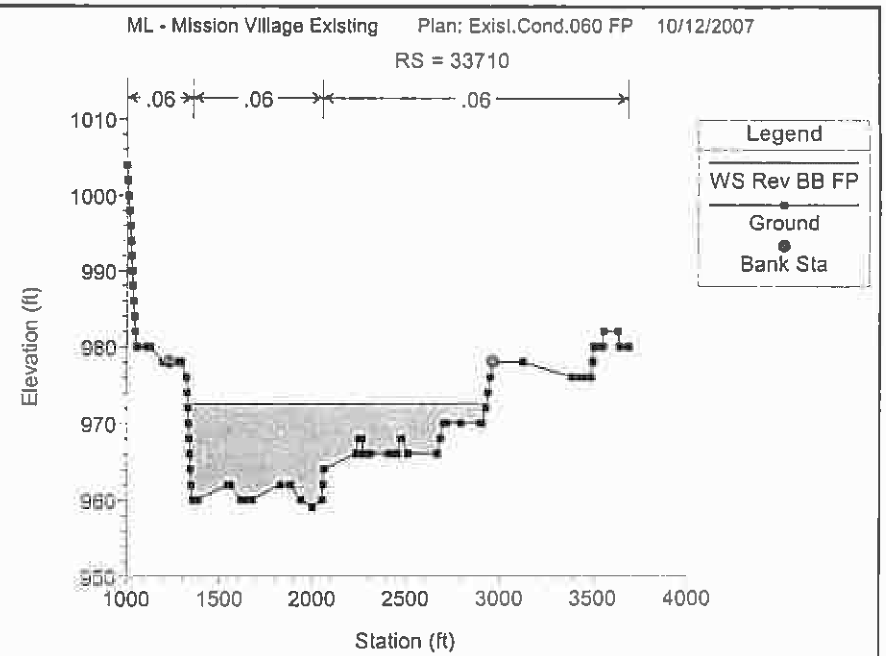

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 34720
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1005
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500

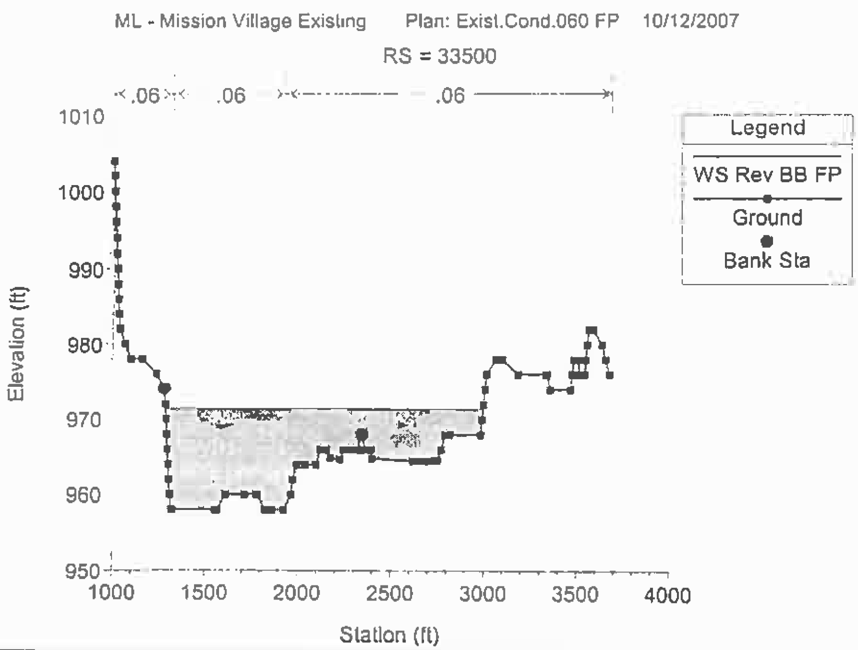

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 34495
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500

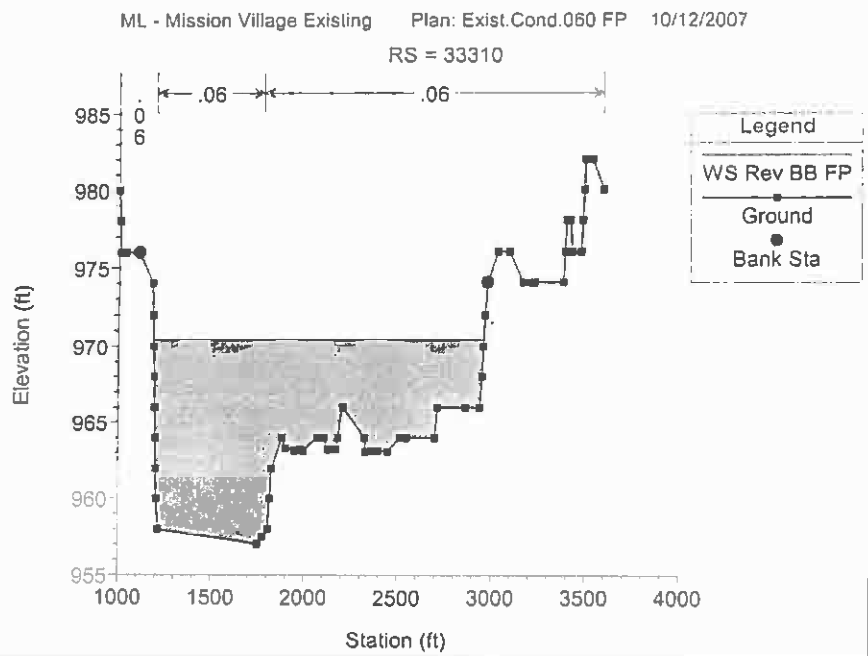

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 34310
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500

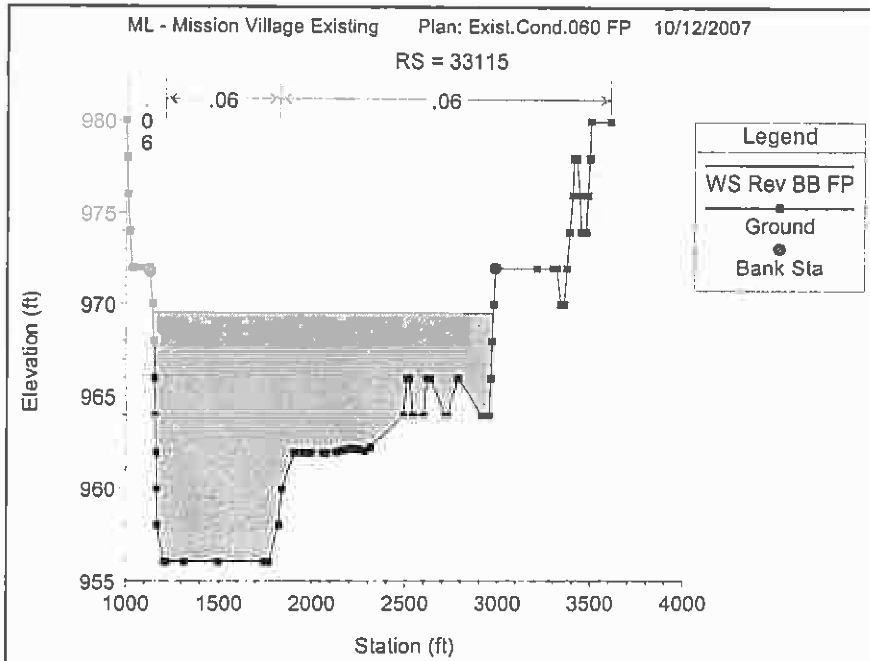

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 34090
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500
4000

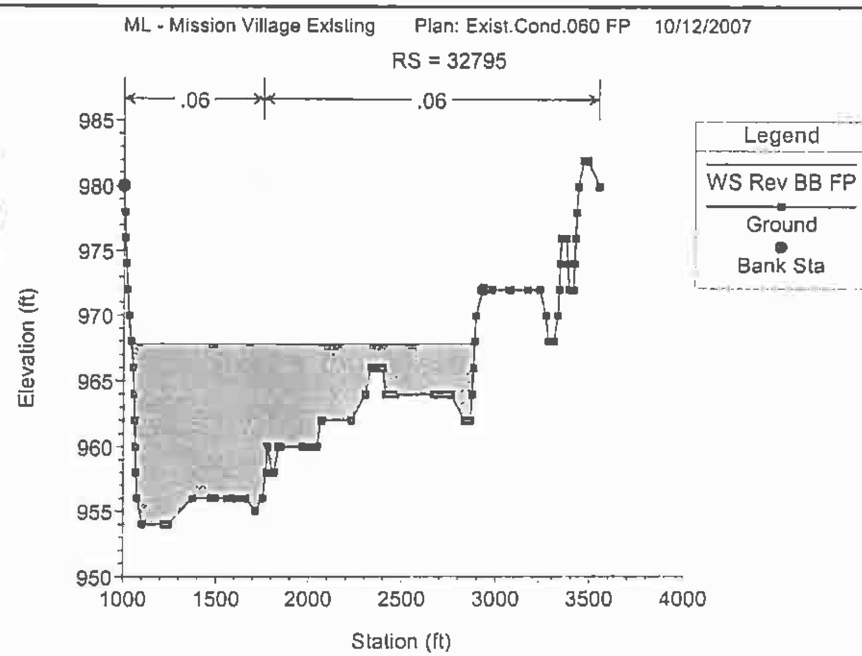

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 33880
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

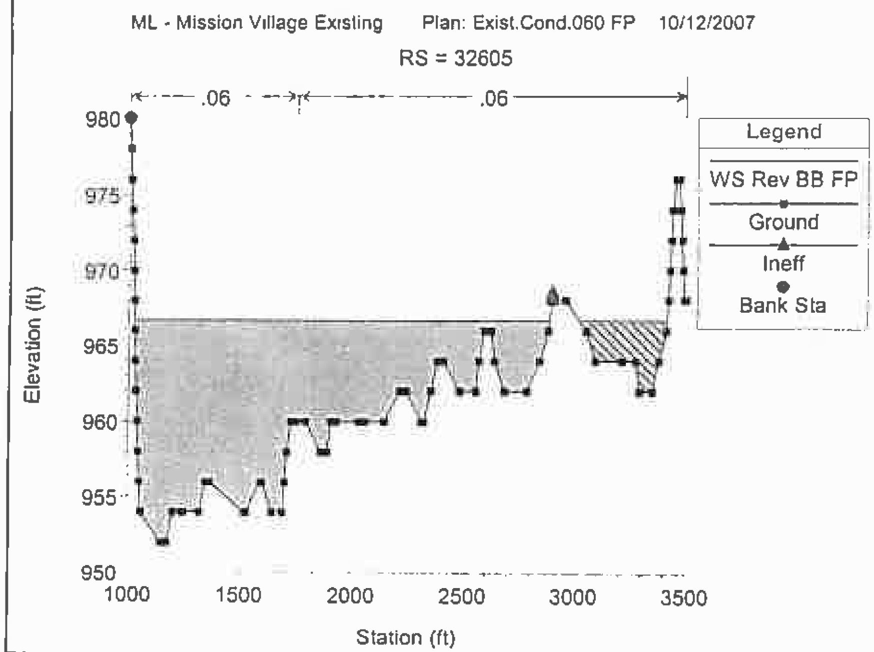

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 33710
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 33500
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 33310
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

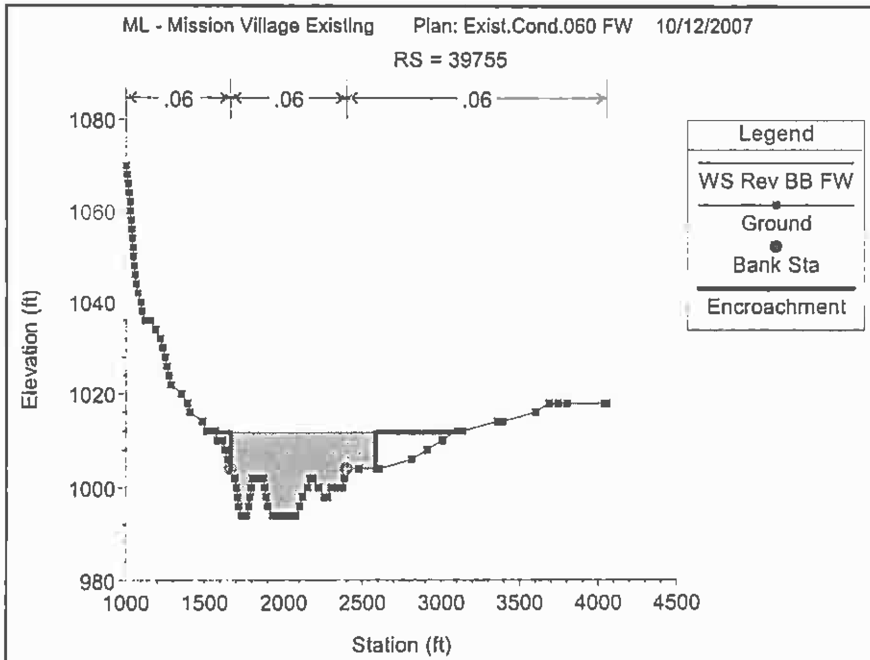

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 33115
.06
.06
0
6
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
955
960
965
970
975
980
1000
1500
2000
2500
3000
3500
4000
Station (ft)

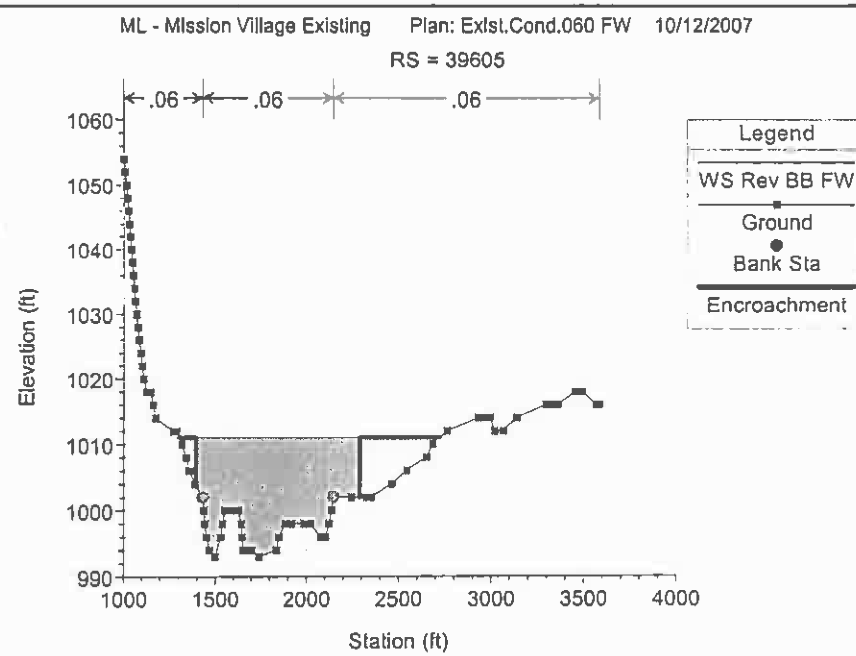

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 32795
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
950
955
960
965
970
975
980
985
1000
1500
2000
2500
3000
3500
4000
Station (ft)

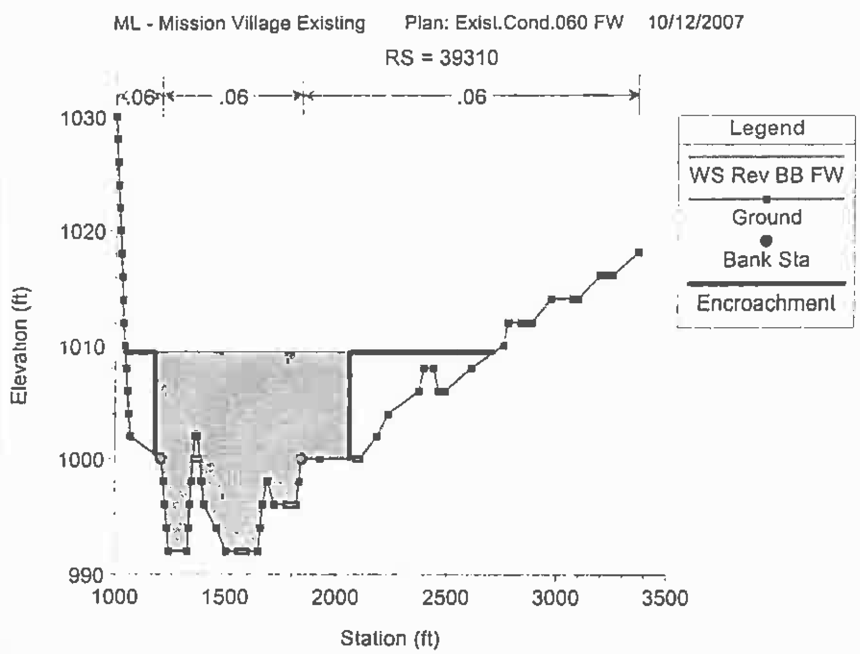

ML - Mission Village Existing Plan: Exist.Cond.060 FP 10/12/2007
RS = 32605
.06
.06
Legend
WS Rev BB FP
Ground
Ineff
Bank Sta
Elevation (ft)
950
955
960
965
970
975
980
1000
1500
2000
2500
3000
3500
Station (ft)

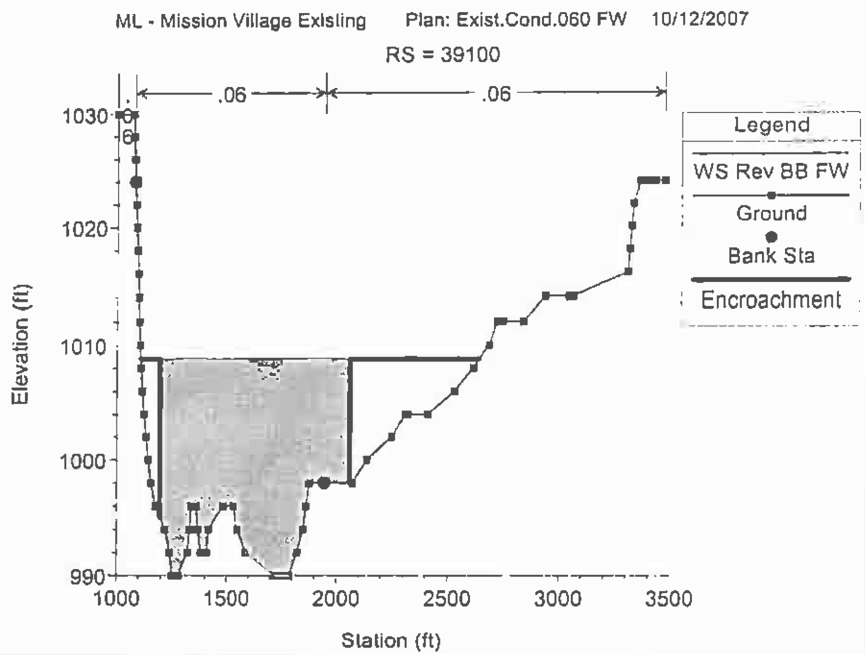
HEC-RAS Plan: EX .060 FW River: Reach #1 Reach: SCR Profile: Rev BB FW

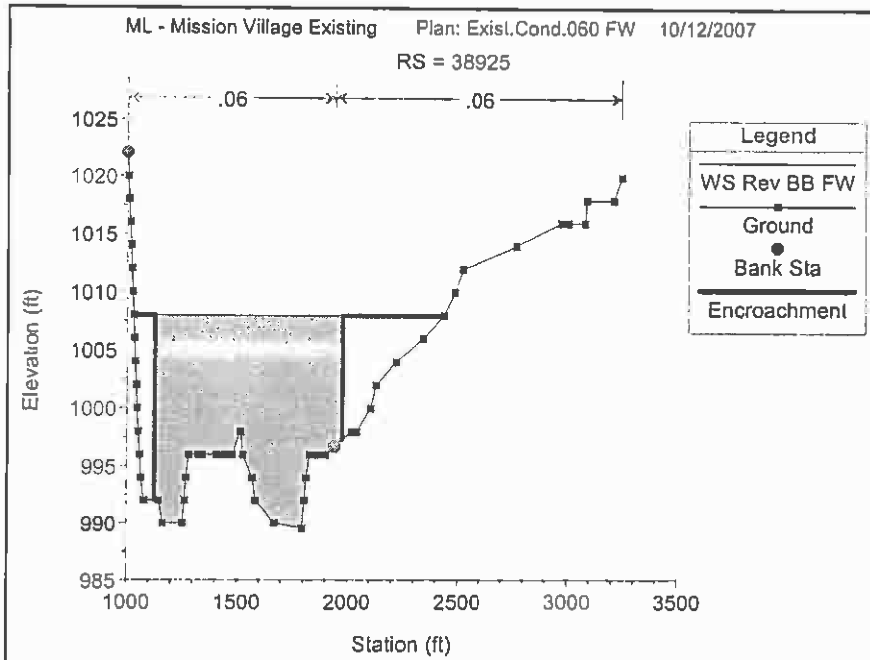
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SCR	39755	Rev BB FW	115111.00	994.00	1011.67	1007.26	1013.31	0.005690	10.54	11384.03	916.57	0.50
SCR	39605	Rev BB FW	115111.00	993.00	1011.01	1005.81	1012.49	0.004662	10.04	11978.25	895.80	0.46
SCR	39310	Rev BB FW	115111.00	992.00	1009.43	1004.51	1011.01	0.004973	10.46	11669.13	879.95	0.48
SCR	39100	Rev BB FW	115111.00	990.00	1008.79	1002.09	1010.04	0.003563	9.12	12944.36	863.63	0.41
SCR	38925	Rev BB FW	115111.00	989.50	1007.95	1001.85	1009.34	0.004271	9.50	12227.21	849.51	0.44
SCR	38710	Rev BB FW	115111.00	988.00	1006.72	1000.69	1008.33	0.004836	10.16	11324.79	756.91	0.46
SCR	38475	Rev BB FW	115111.00	986.00	1004.52	1000.03	1006.90	0.007230	12.40	9355.50	649.37	0.57
SCR	38300	Rev BB FW	115111.00	985.50	1003.58	997.79	1005.67	0.005804	11.62	9902.98	619.81	0.51
SCR	38065	Rev BB FW	115111.00	984.00	1001.74	996.40	1004.18	0.006621	12.52	9196.17	569.63	0.55
SCR	37810	Rev BB FW	115111.00	983.00	998.59	995.71	1001.90	0.011398	14.61	7876.52	586.94	0.70
SCR	37655	Rev BB FW	115111.00	982.00	995.96	994.65	999.73	0.016543	15.60	7380.11	672.51	0.83
SCR	37390	Rev BB FW	115111.00	981.00	995.01	990.05	996.71	0.005716	10.47	11034.63	822.84	0.50
SCR	37135	Rev BB FW	115111.00	980.00	993.48	989.05	995.17	0.006279	10.55	11050.10	883.58	0.52
SCR	36930	Rev BB FW	115111.00	978.00	992.71	987.20	994.01	0.004312	9.31	12682.31	955.00	0.44
SCR	36735	Rev BB FW	115111.00	977.00	991.86	986.66	993.14	0.004370	9.24	12804.17	1006.44	0.45
SCR	36515	Rev BB FW	115111.00	975.00	991.03	985.70	992.21	0.003968	8.89	13362.77	1061.35	0.43
SCR	36265	Rev BB FW	115111.00	974.00	989.89	985.26	991.12	0.004846	8.92	12909.52	1124.31	0.46
SCR	36080	Rev BB FW	116236.00	973.00	988.89	984.59	990.15	0.005525	9.03	12876.23	1167.05	0.48
SCR	35845	Rev BB FW	116236.00	971.00	987.66	983.18	988.93	0.004914	9.04	12853.11	1133.72	0.47
SCR	35725	Rev BB FW	116236.00	970.00	986.72	983.19	988.25	0.005929	10.36	11959.21	1106.20	0.53
SCR	35515	Rev BB FW	116236.00	969.00	985.57	981.72	987.05	0.005523	10.27	12231.41	1091.52	0.50
SCR	35245	Rev BB FW	116236.00	968.00	983.59	980.52	985.34	0.007069	10.96	11265.90	1091.50	0.56
SCR	35040	Rev BB FW	116236.00	967.00	982.27	979.16	983.93	0.006352	11.44	11761.35	1105.48	0.54
SCR	34860	Rev BB FW	116236.00	966.00	980.99	977.89	982.71	0.007655	10.50	11068.98	1090.73	0.58
SCR	34720	Rev BB FW	116236.00	965.50	979.88	976.65	981.62	0.007649	10.57	10997.69	1053.47	0.58
SCR	34495	Rev BB FW	116236.00	964.00	978.34	974.71	980.00	0.006746	10.44	11327.72	1027.57	0.55
SCR	34310	Rev BB FW	116236.00	963.00	977.26	973.36	978.80	0.005645	10.38	12015.71	1057.50	0.50
SCR	34090	Rev BB FW	116236.00	962.00	975.91	972.25	977.47	0.006591	10.02	11597.94	1077.58	0.54
SCR	33880	Rev BB FW	116236.00	960.00	974.59	971.04	976.08	0.006537	9.80	11864.44	1144.22	0.54
SCR	33710	Rev BB FW	116236.00	959.00	973.56	969.89	974.94	0.006221	9.42	12344.32	1202.47	0.52
SCR	33500	Rev BB FW	116236.00	958.00	972.36	968.75	973.63	0.005923	9.36	13041.21	1295.35	0.50
SCR	33310	Rev BB FW	116236.00	957.00	971.34	967.47	972.54	0.005428	8.80	13202.25	1304.27	0.49
SCR	33115	Rev BB FW	116236.00	956.00	970.50	965.83	971.50	0.004509	8.02	14501.12	1349.00	0.43
SCR	32795	Rev BB FW	116236.00	954.00	968.74	964.86	969.92	0.005437	8.73	13321.63	1369.37	0.49
SCR	32605	Rev BB FW	116236.00	952.00	967.61	964.28	968.82	0.006002	8.81	13190.46	1427.22	0.51

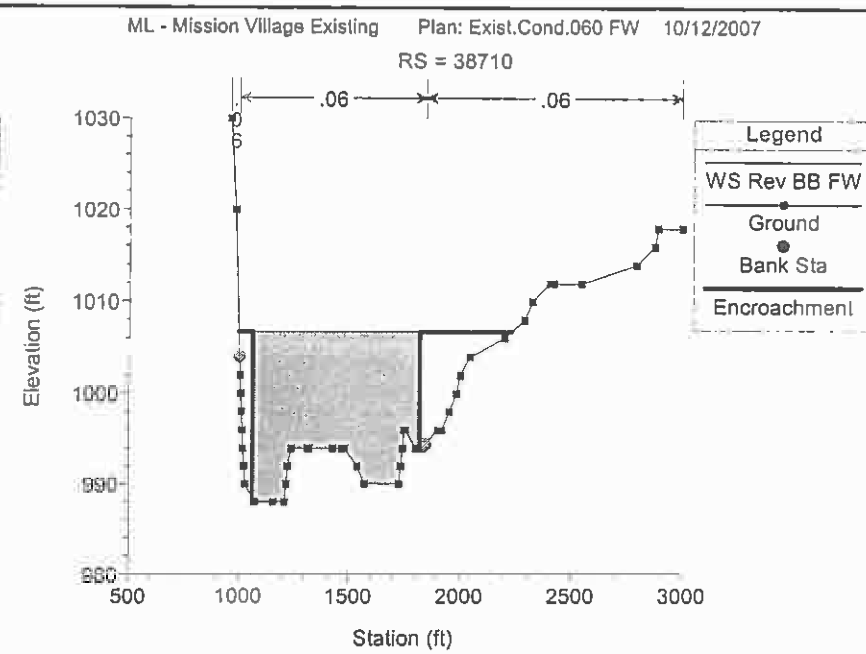

ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 39755
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
980
1000
1020
1040
1060
1080
Station (ft)
1000
1500
2000
2500
3000
3500
4000
4500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 39605
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
990
1000
1010
1020
1030
1040
1050
1060
Station (ft)
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 39310
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
990
1000
1010
1020
1030
Station (ft)
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 39100
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
990
1000
1010
1020
1030
Station (ft)
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 38925
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1025
1020
1015
1010
1005
1000
995
990
985
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 38710
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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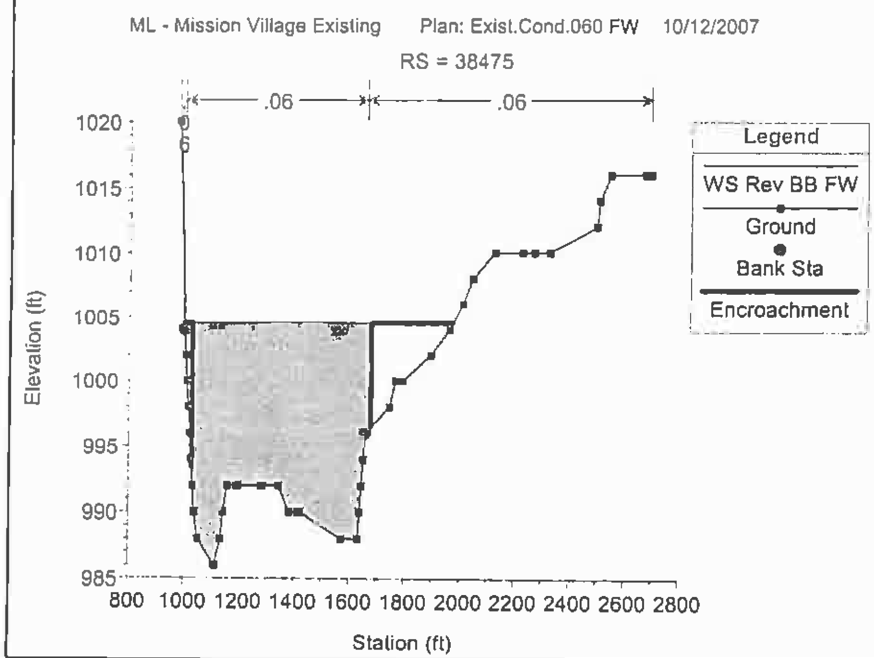
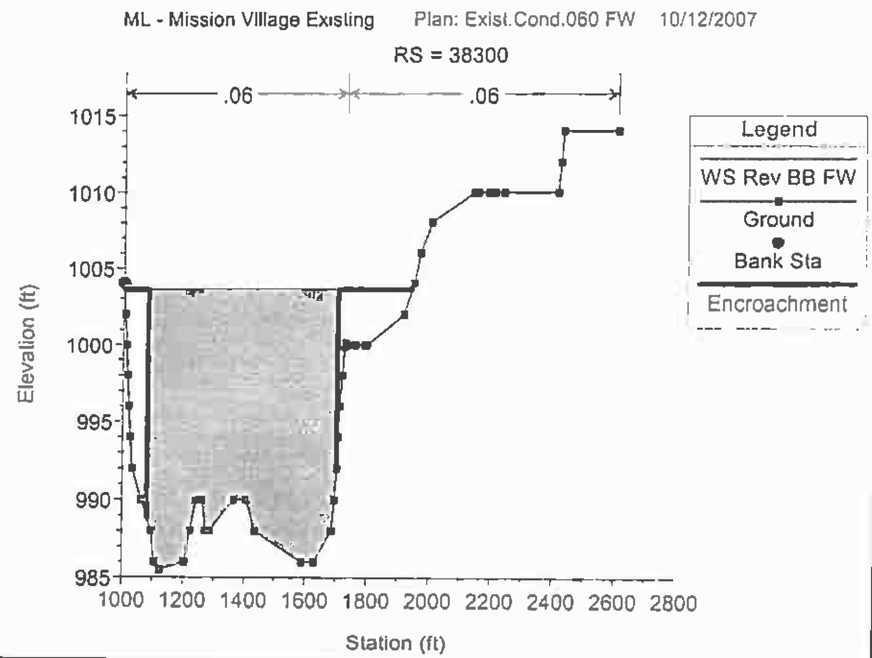
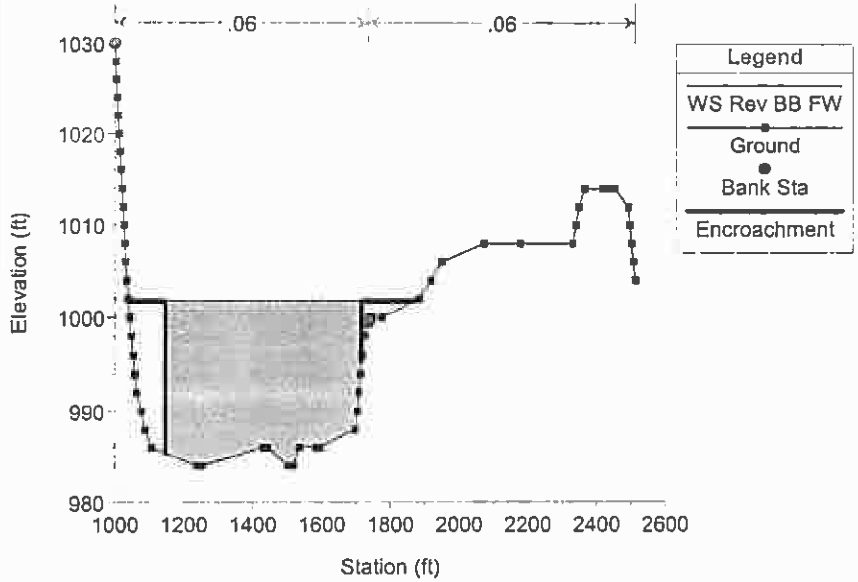
1000
1500
2000
2500
3000


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 38475
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1015
1010
1005
1000
995
990
985
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 38300
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1015
1010
1005
1000
995
990
985
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800

ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 38065



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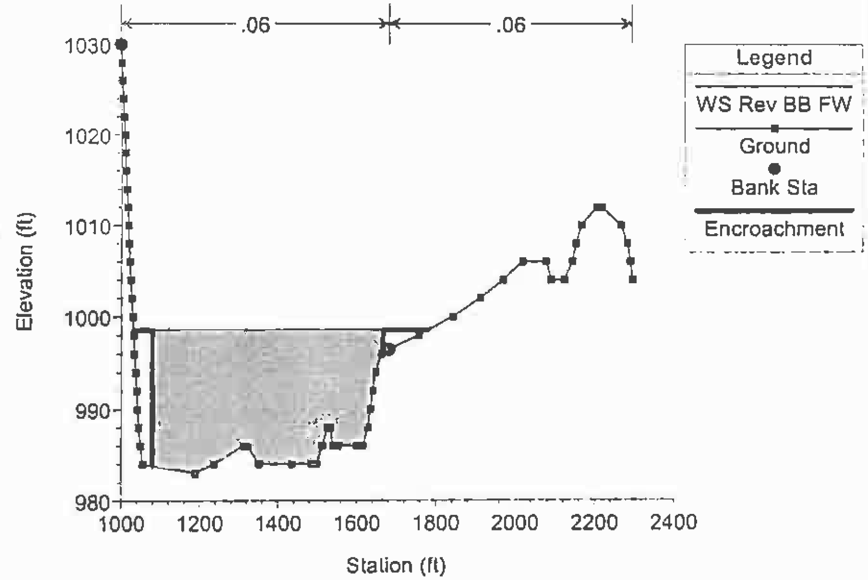
RS = 37810



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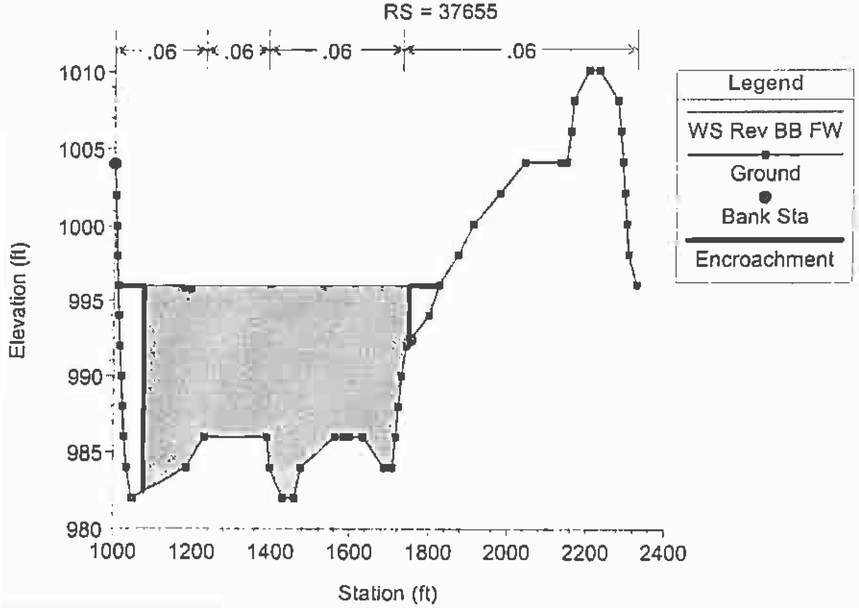
RS = 37655



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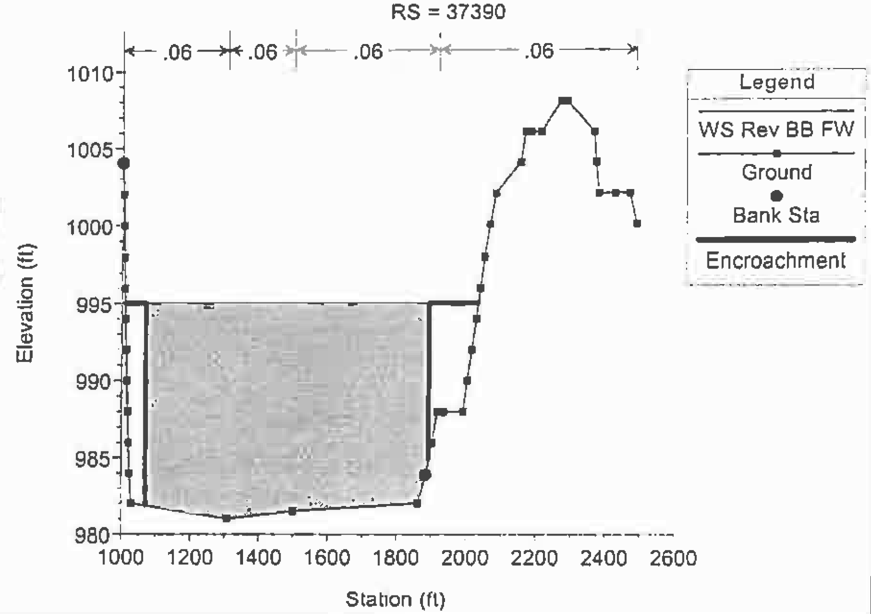
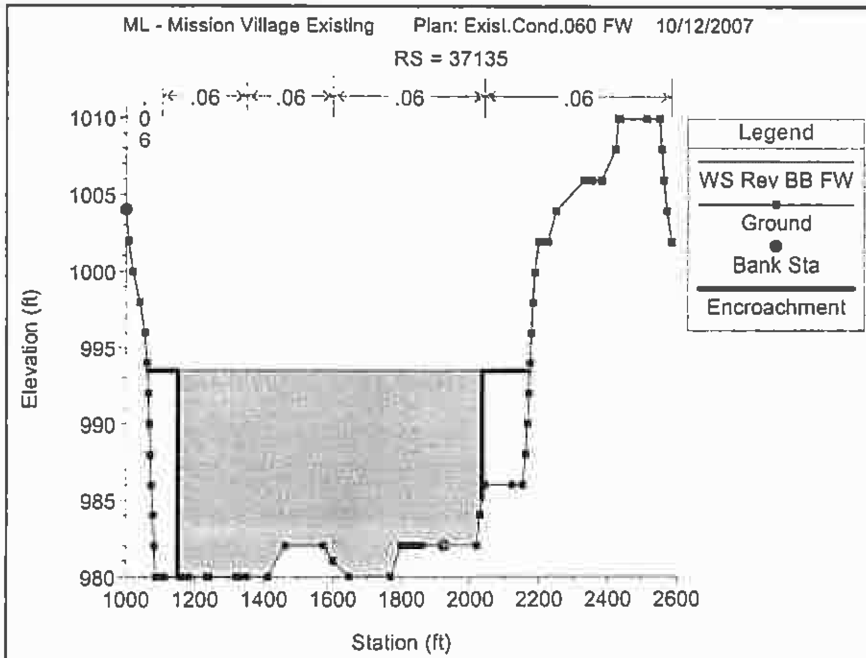
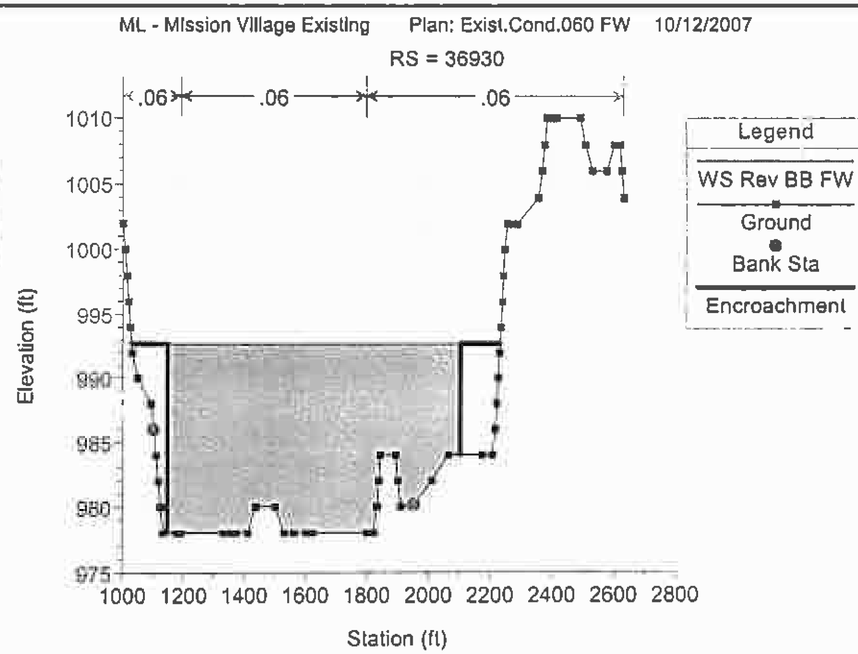
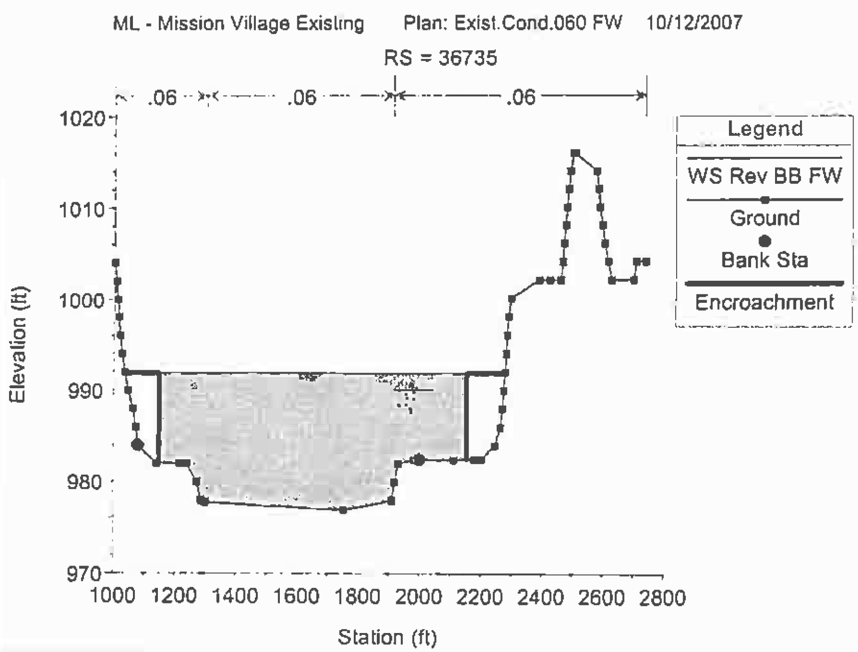
RS = 37390




ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 37135
.06 .06 .06 .06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 36930
.06 .06 .06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
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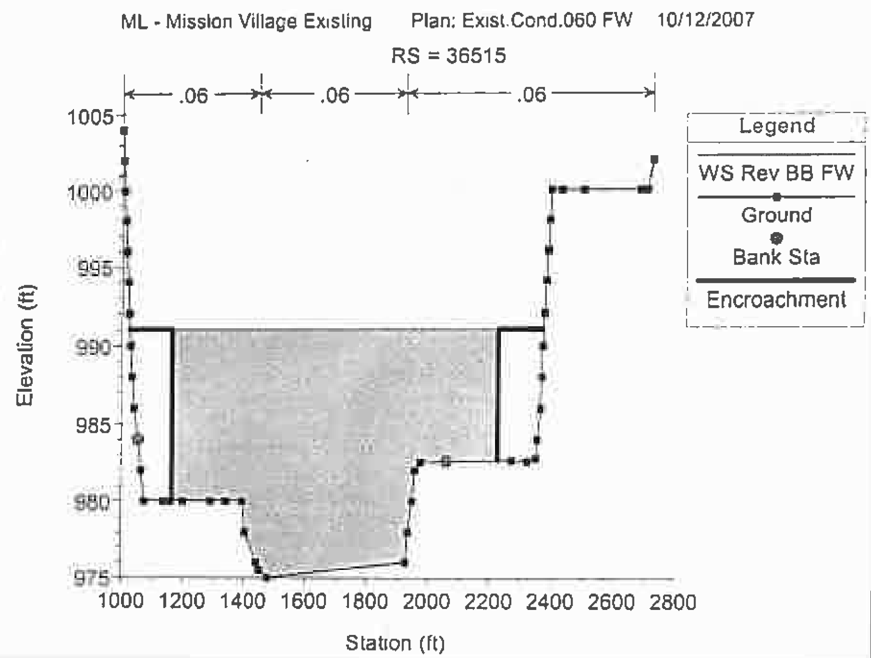
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
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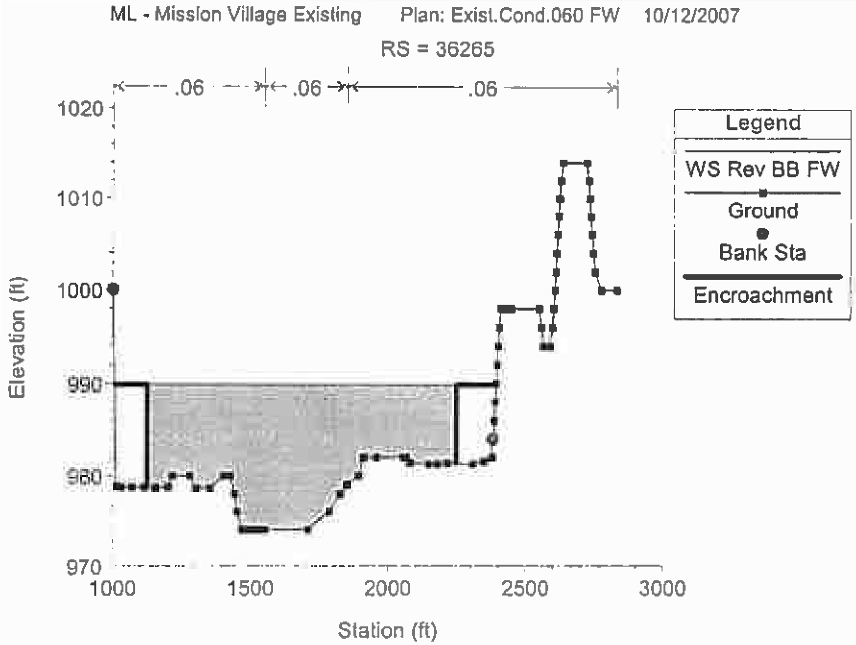
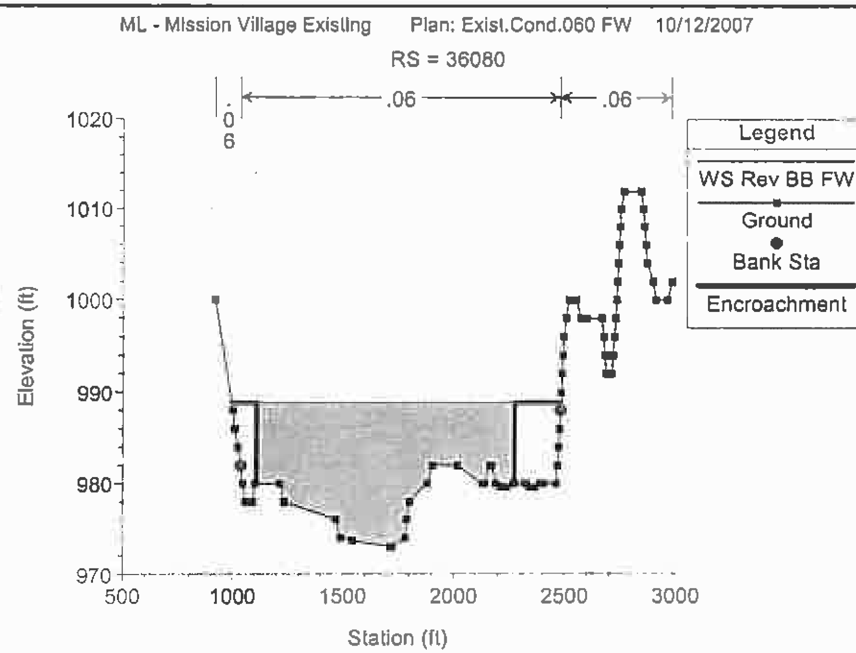
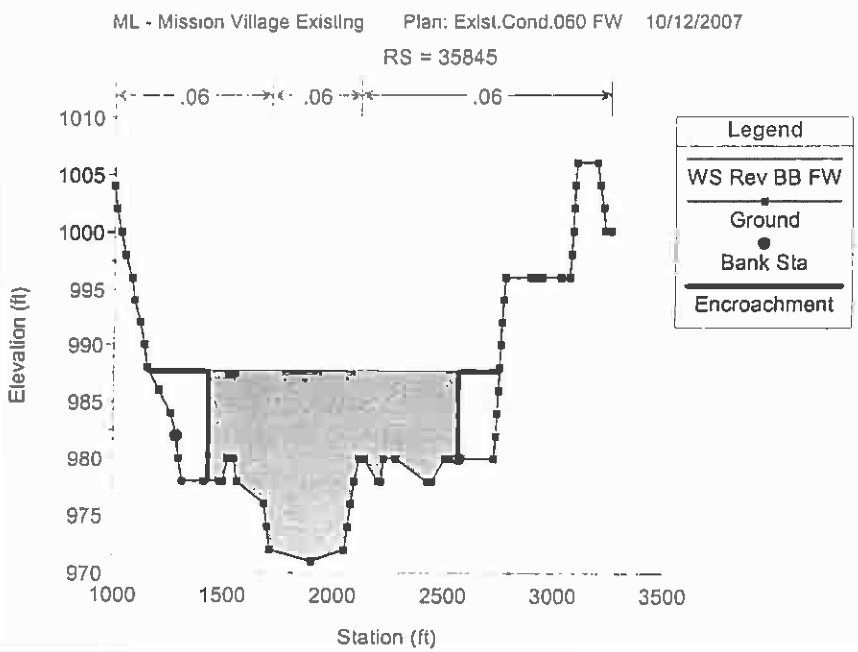
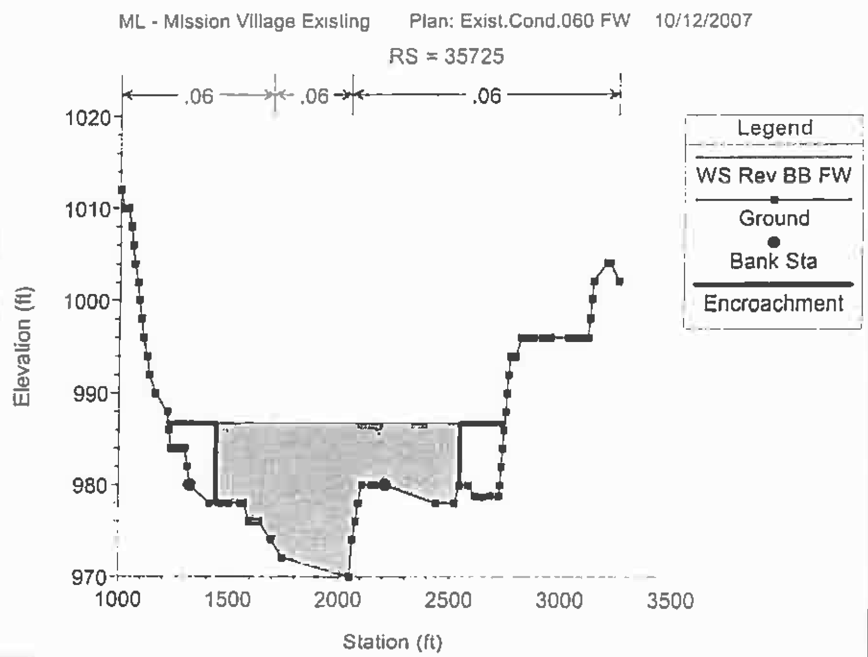
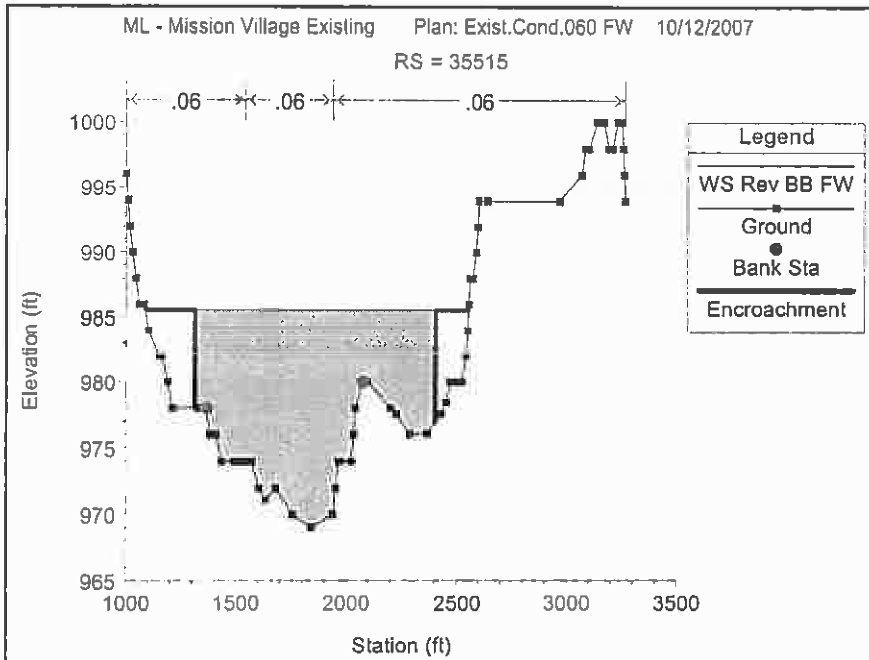
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

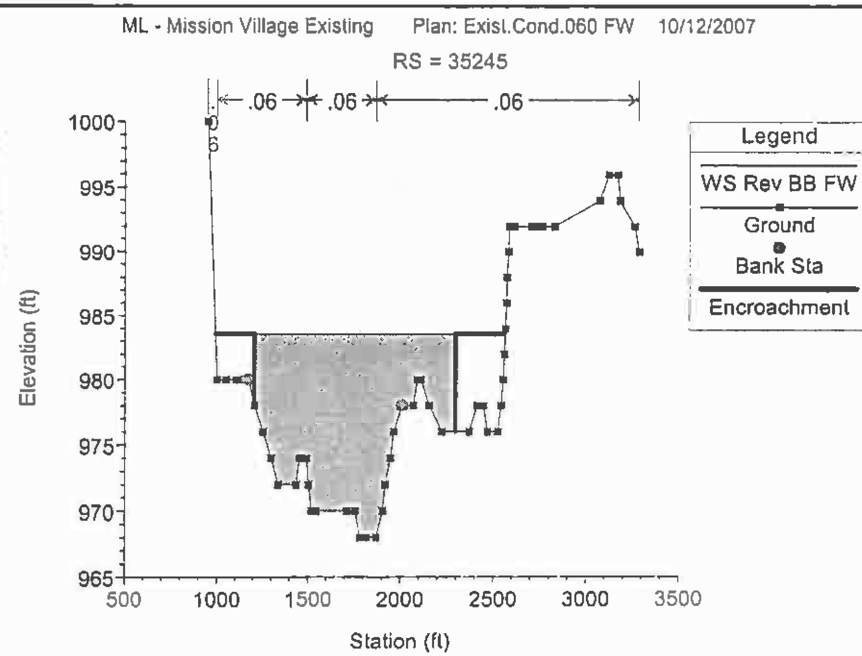

ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 36265
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1010
1000
990
980
970
1000
1500
2000
2500
3000


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 36080
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1010
1000
990
980
970
500
1000
1500
2000
2500
3000


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 35845
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1010
1005
1000
995
990
985
980
975
970
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 35725
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1010
1000
990
980
970
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 35515
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500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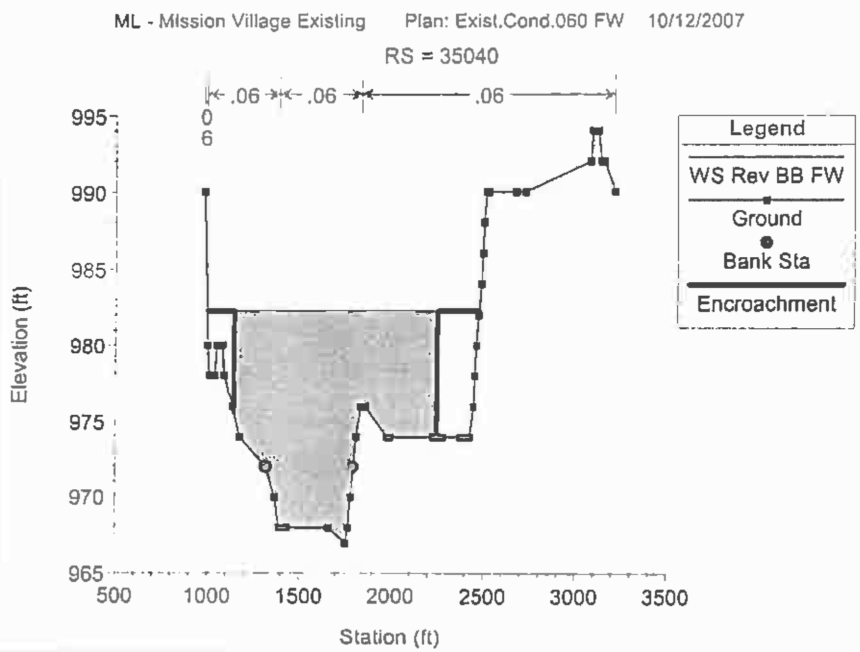
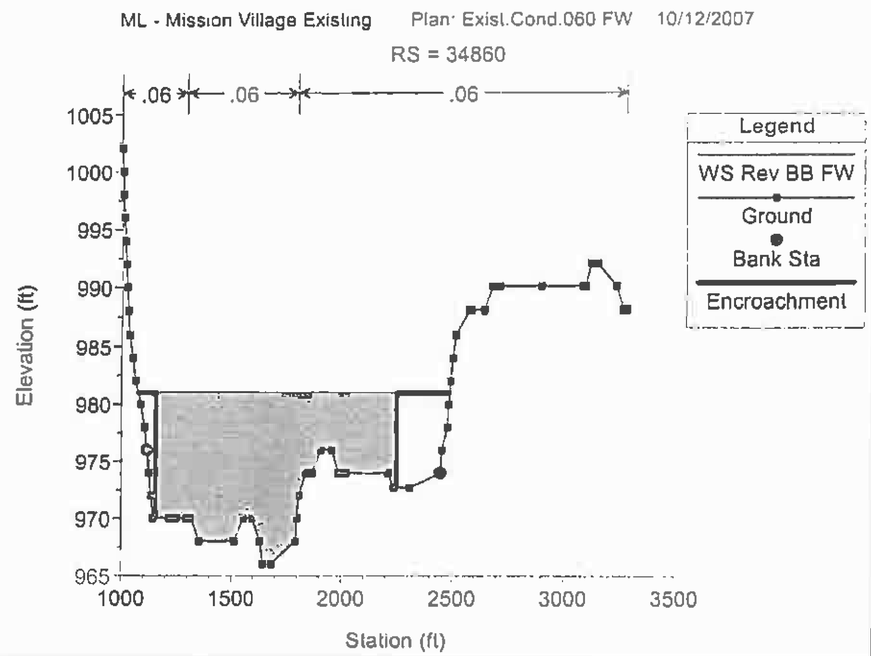
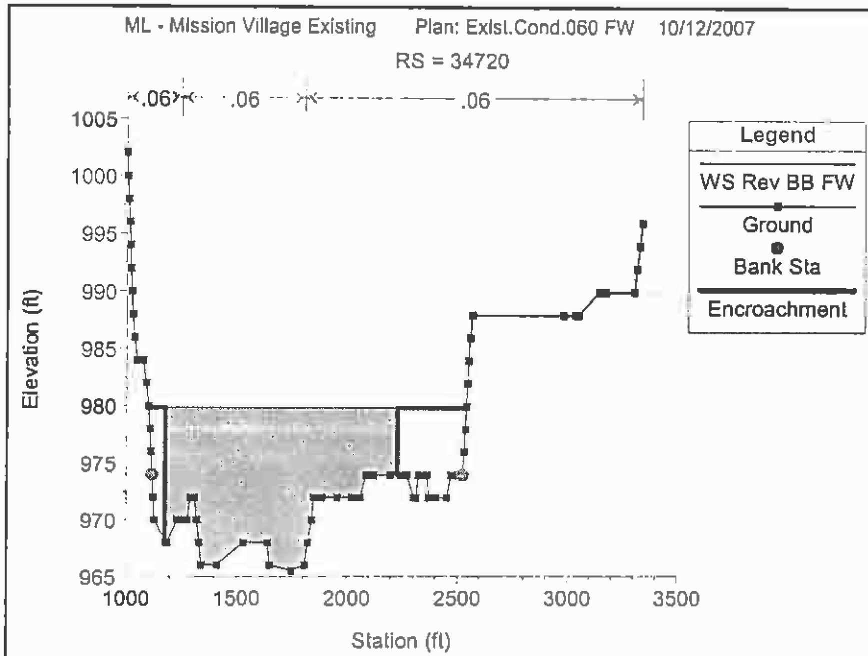
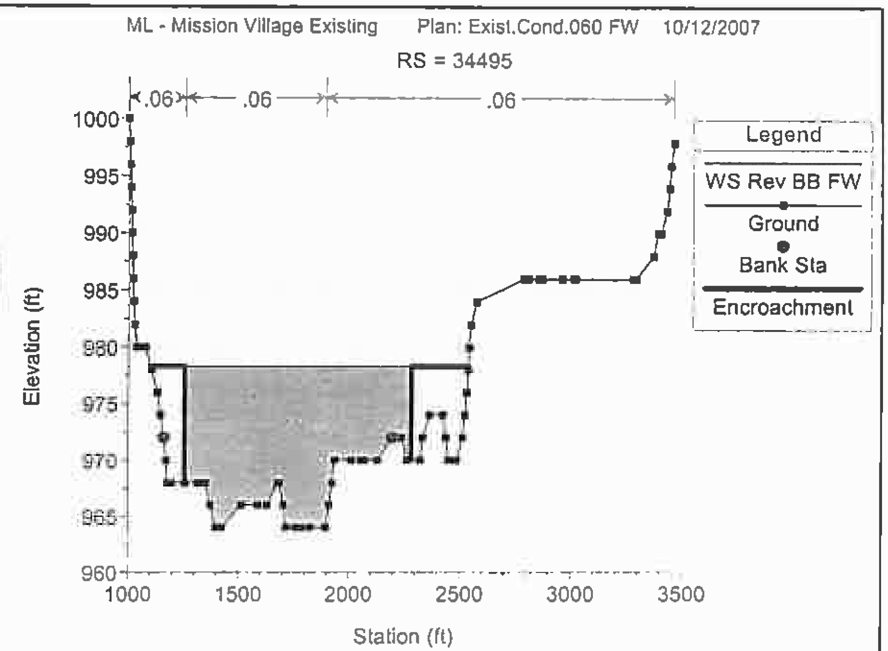
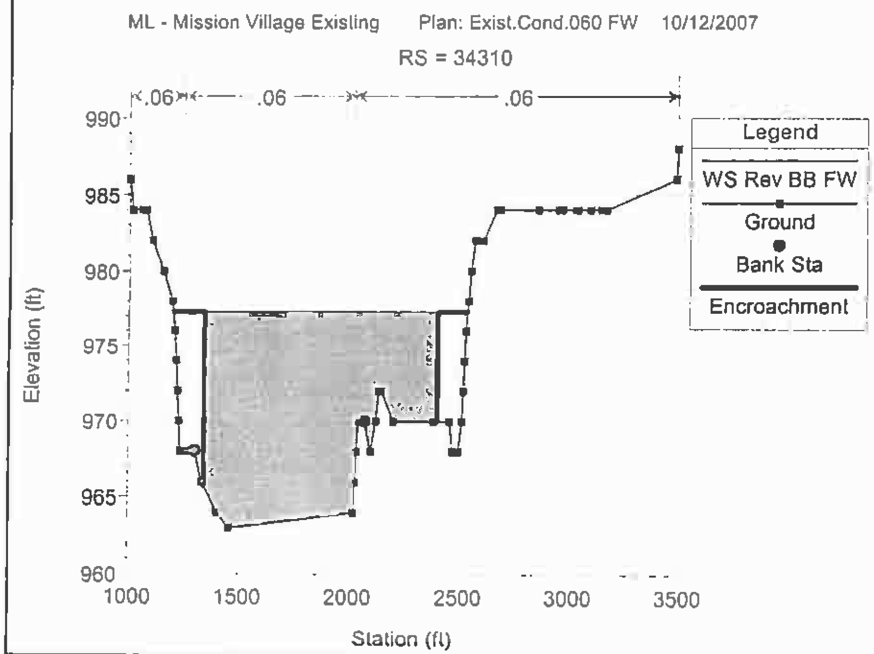
Plan: Exist.Cond.060 FW
10/12/2007
RS = 35245
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
500
1000
1500
2000
2500
3000
3500

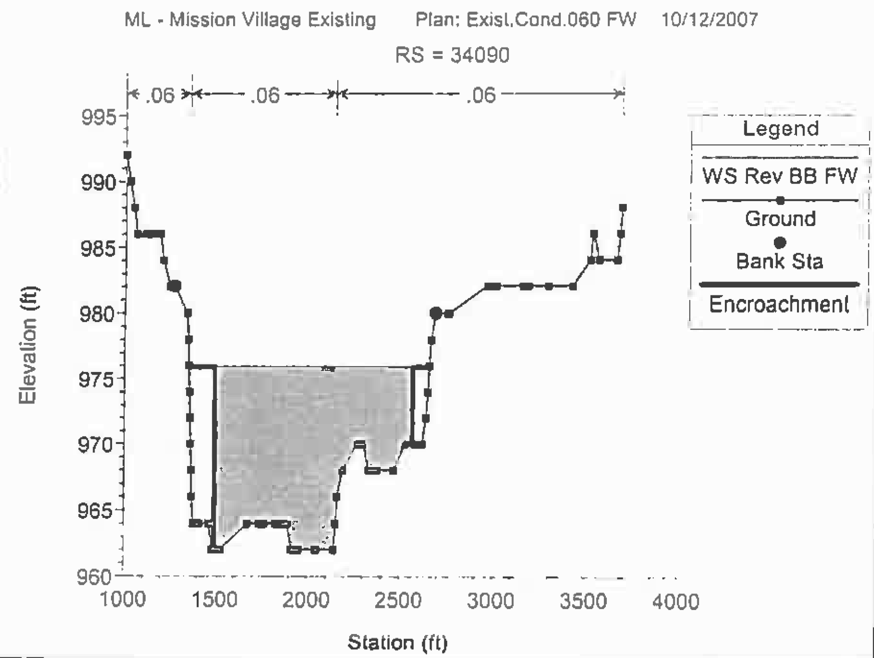

ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 35040
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
995
990
985
980
975
970
965
500
1000
1500
2000
2500
3000
3500

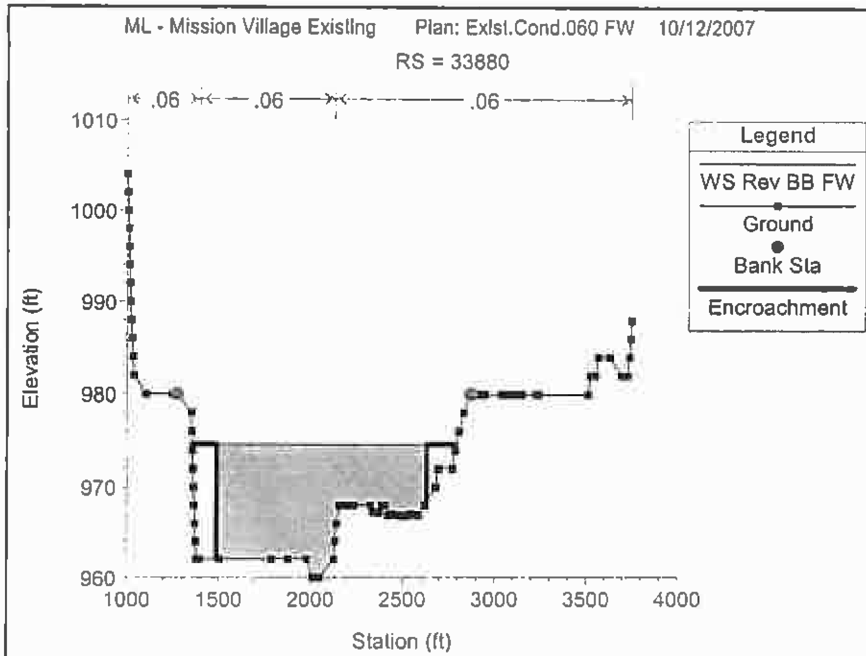

ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 34860
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1005
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 34720
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1005
1000
995
990
985
980
975
970
965
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 34495
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1000
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 34310
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 34090
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
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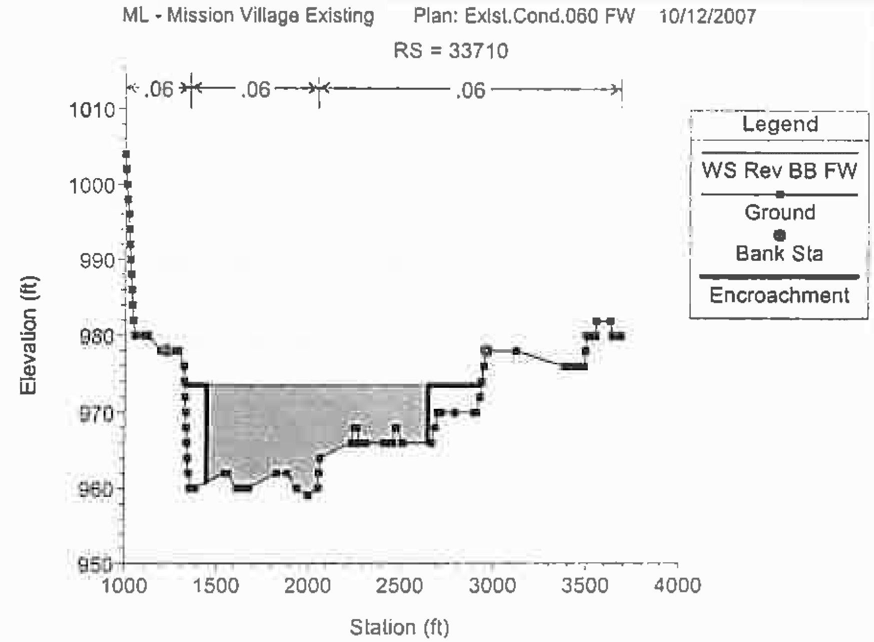
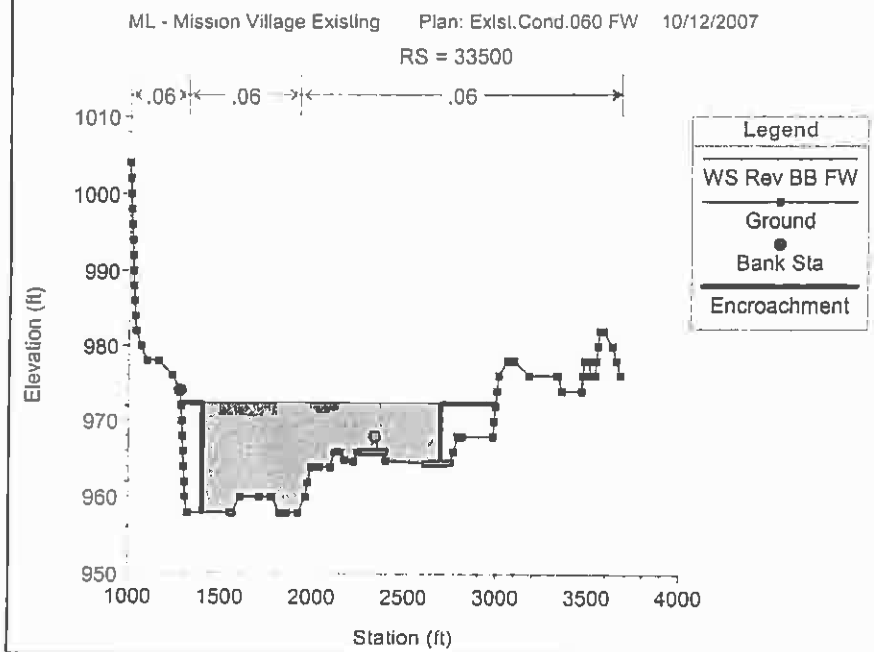
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
RS = 33710
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
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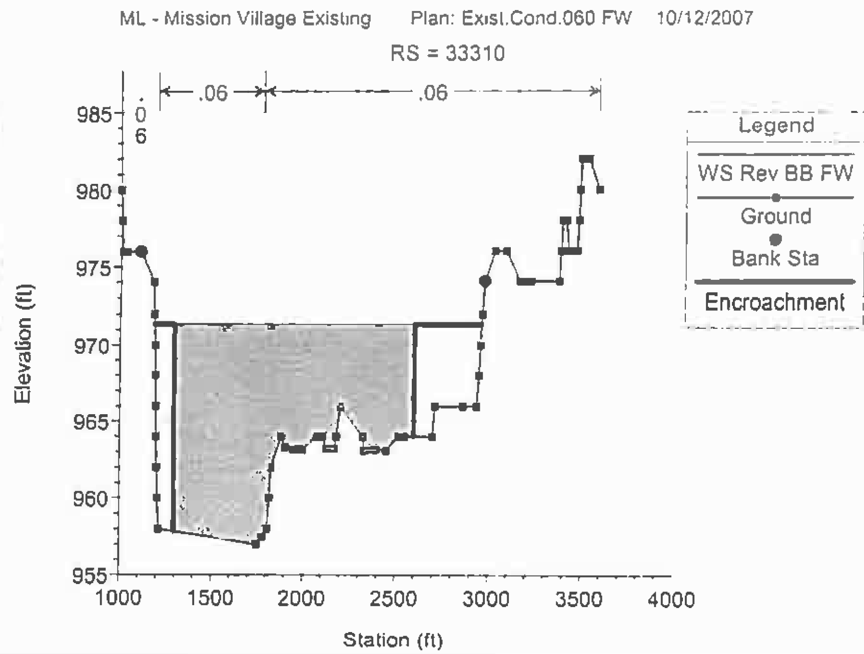
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Existing
Plan: Exist.Cond.060 FW
10/12/2007
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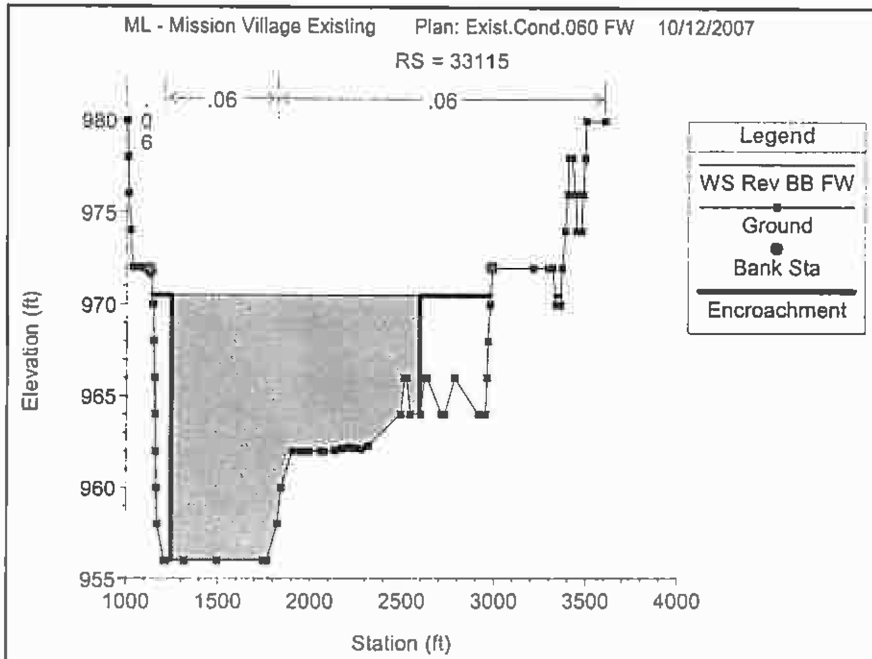
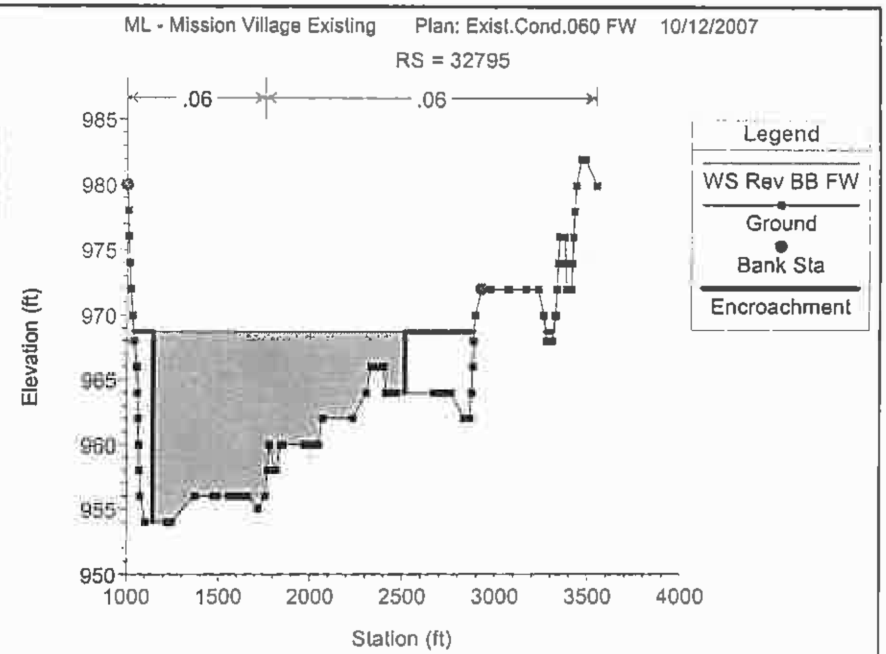
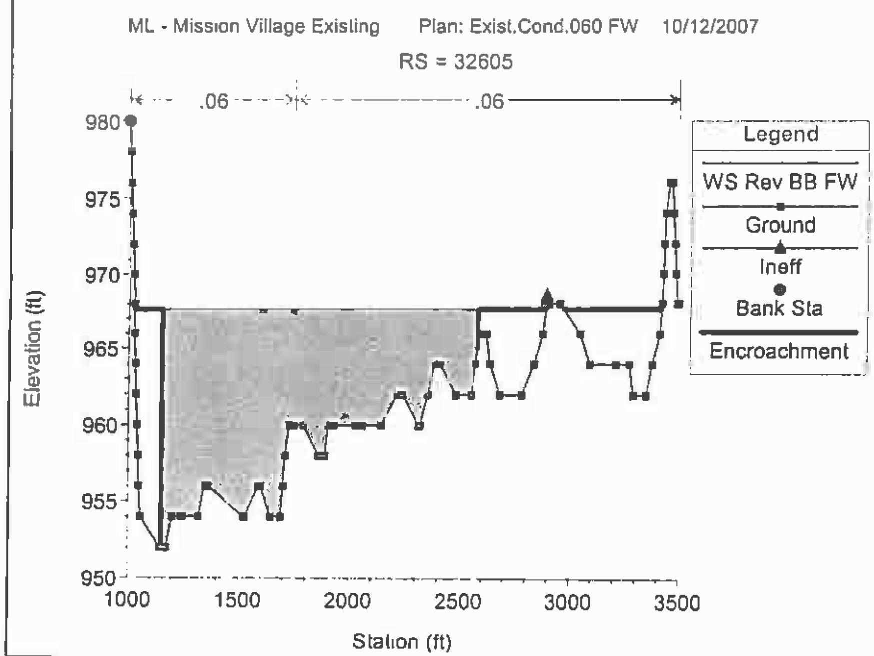
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 33115
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
955
960
965
970
975
980
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 32795
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
950
955
960
965
970
975
980
985
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Existing Plan: Exist.Cond.060 FW 10/12/2007
RS = 32605
.06
.06
Legend
WS Rev BB FW
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
950
955
960
965
970
975
980
1000
1500
2000
2500
3000
3500

Appendix C

Appendix C

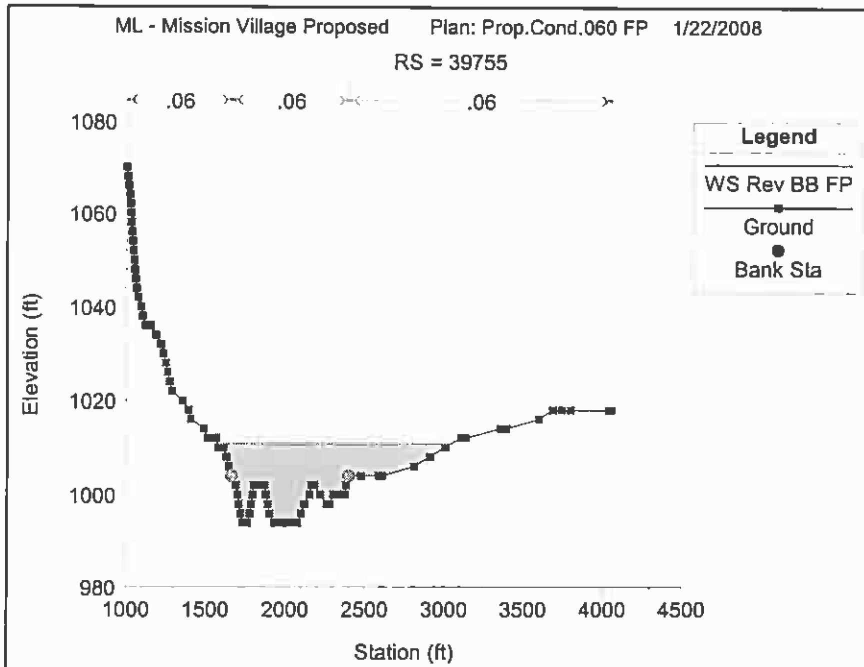
PACE

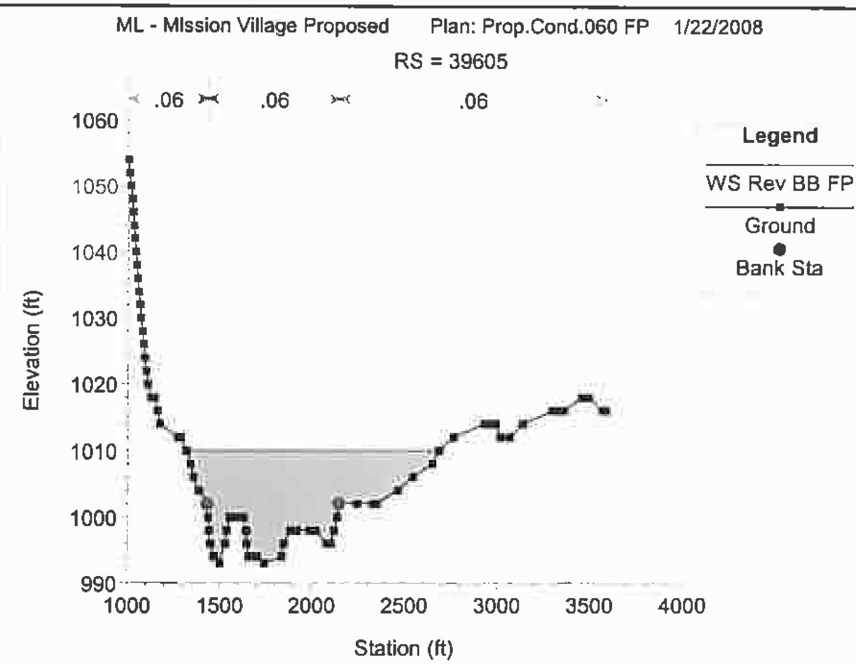
Appendix C

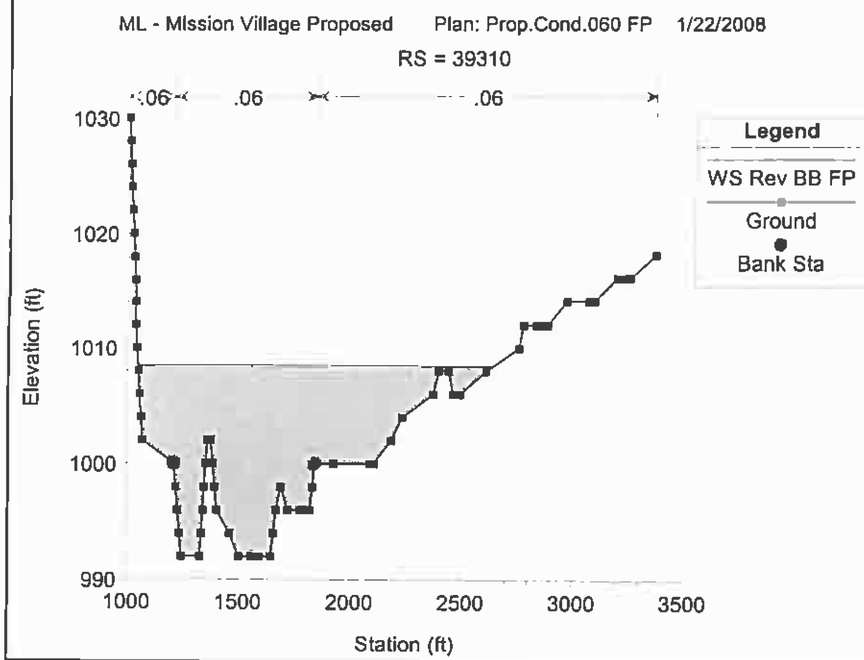
Proposed Conditions Capital Floodplain and Floodway, n = 0.060

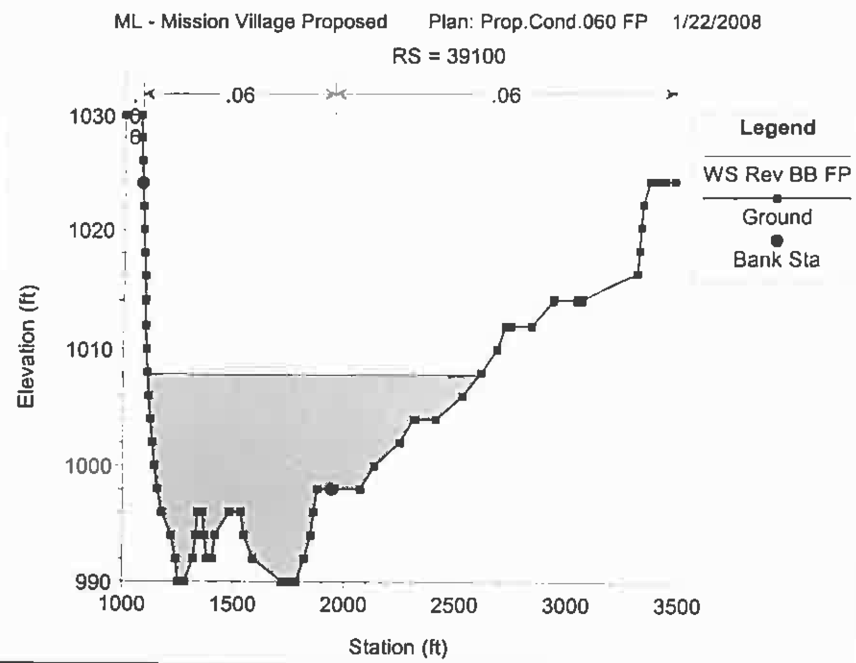
HEC-RAS Plan: Pr.060 FP River: SCR Reach: Project Profile: Rev BB FP

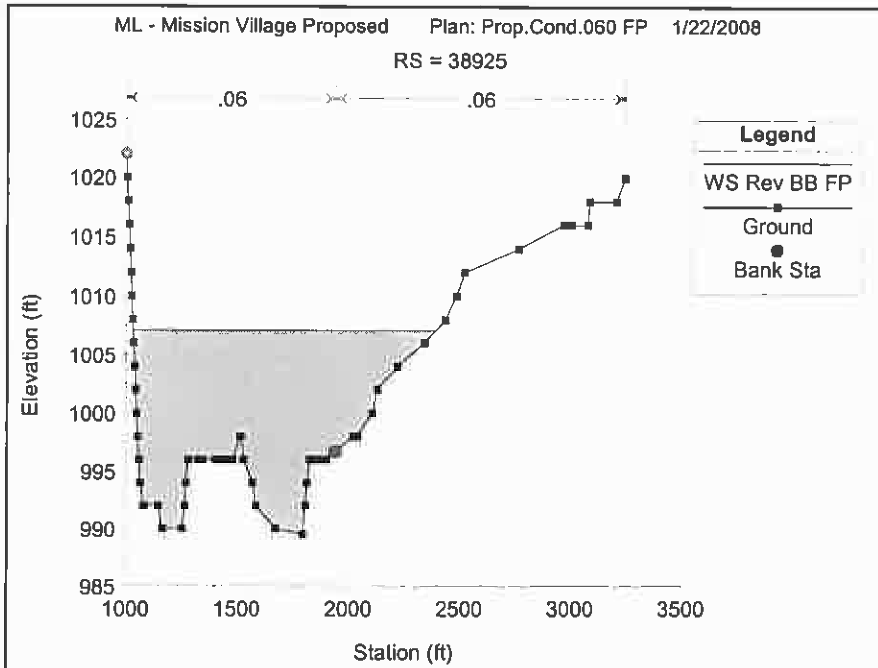
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Project	39755	Rev BB FP	115111.00	994.00	1010.68	1007.49	1012.19	0.006146	10.48	12580.87	1465.08	0.52
Project	39605	Rev BB FP	115111.00	993.00	1009.99	1005.91	1011.30	0.004890	9.80	13367.05	1368.01	0.47
Project	39310	Rev BB FP	115111.00	992.00	1008.43	1004.44	1009.76	0.005110	10.12	13723.31	1595.92	0.48
Project	39100	Rev BB FP	115111.00	990.00	1007.79	1002.13	1008.78	0.003453	8.43	15336.82	1496.06	0.40
Project	38925	Rev BB FP	115111.00	989.50	1007.08	1001.39	1008.14	0.003726	8.54	14563.34	1361.03	0.41
Project	38710	Rev BB FP	115111.00	988.00	1006.15	1000.08	1007.32	0.003747	8.89	13832.35	1210.38	0.41
Project	38475	Rev BB FP	115111.00	986.00	1003.67	999.95	1005.97	0.007972	12.42	9898.41	950.04	0.60
Project	38300	Rev BB FP	115111.00	985.50	1002.77	997.52	1004.64	0.005751	11.01	10753.31	925.57	0.51
Project	38065	Rev BB FP	115111.00	984.00	1001.39	995.71	1003.30	0.005534	11.10	10458.33	810.90	0.51
Project	37810	Rev BB FP	115111.00	983.00	998.33	995.23	1001.29	0.010537	13.81	8408.17	739.85	0.68
Project	37655	Rev BB FP	115111.00	982.00	997.14	994.10	999.59	0.009310	12.63	9282.13	855.33	0.64
Project	37390	Rev BB FP	115111.00	981.00	995.94	990.39	997.55	0.005135	10.18	11303.91	817.40	0.48
Project	37135	Rev BB FP	115111.00	980.00	994.16	989.60	996.05	0.006570	11.03	10440.45	805.86	0.54
Project	36930	Rev BB FP	115111.00	978.00	993.23	987.60	994.79	0.005000	10.00	11506.84	866.85	0.48
Project	36735	Rev BB FP	115111.00	977.00	992.21	987.09	993.75	0.005449	9.95	11569.13	908.31	0.49
Project	36515	Rev BB FP	115111.00	975.00	991.44	985.42	992.64	0.004028	8.79	13090.19	985.64	0.43
Project	36374	Rev BB FP	115111.00	974.11	991.04	985.06	992.11	0.003781	8.28	13896.08	1090.14	0.41
Project	36299		Bridge									
Project	36240	Rev BB FP	115111.00	974.11	989.20	985.19	990.66	0.006439	9.71	11856.90	1094.19	0.52
Project	36080	Rev BB FP	116236.00	973.00	988.04	984.69	989.60	0.007590	10.04	11572.59	1148.70	0.56
Project	35845	Rev BB FP	116236.00	971.00	986.89	982.91	988.01	0.005181	8.49	13689.77	1433.70	0.48
Project	35725	Rev BB FP	116236.00	970.00	985.99	982.70	987.31	0.006046	9.33	12834.44	1432.33	0.52
Project	35515	Rev BB FP	116236.00	969.00	984.66	981.71	986.05	0.006031	10.25	13009.58	1452.87	0.52
Project	35245	Rev BB FP	116236.00	968.00	982.78	980.46	984.27	0.007171	10.44	12558.42	1568.86	0.56
Project	35040	Rev BB FP	116236.00	967.00	981.26	978.98	982.80	0.007003	11.42	12555.09	1473.45	0.56
Project	34860	Rev BB FP	116236.00	966.00	979.95	977.40	981.46	0.008311	9.87	11778.23	1397.32	0.60
Project	34720	Rev BB FP	116236.00	965.50	978.91	976.17	980.30	0.007553	9.46	12291.13	1434.22	0.57
Project	34495	Rev BB FP	116236.00	964.00	977.35	974.30	978.67	0.006901	9.22	12609.77	1424.09	0.55
Project	34310	Rev BB FP	116236.00	963.00	976.23	972.90	977.51	0.005476	9.71	13346.36	1390.77	0.49
Project	34090	Rev BB FP	116236.00	962.00	974.98	971.50	976.25	0.006060	9.05	12840.92	1352.43	0.52
Project	33880	Rev BB FP	116236.00	960.00	973.59	970.45	974.92	0.006730	9.23	12590.30	1447.37	0.55
Project	33710	Rev BB FP	116236.00	959.00	972.56	969.24	973.73	0.006377	8.70	13366.69	1623.02	0.53
Project	33500	Rev BB FP	116236.00	958.00	971.32	968.41	972.43	0.005879	8.91	14259.22	1707.38	0.49
Project	33310	Rev BB FP	116236.00	957.00	970.43	967.01	971.36	0.004941	7.75	15005.17	1770.85	0.47
Project	33115	Rev BB FP	116236.00	956.00	969.56	965.60	970.37	0.004681	7.21	16114.04	1830.33	0.43
Project	32795	Rev BB FP	116236.00	954.00	967.78	964.63	968.76	0.005440	7.95	14612.02	1842.51	0.50
Project	32605	Rev BB FP	116236.00	952.00	966.63	963.61	967.66	0.005908	8.14	14278.35	2251.79	0.52

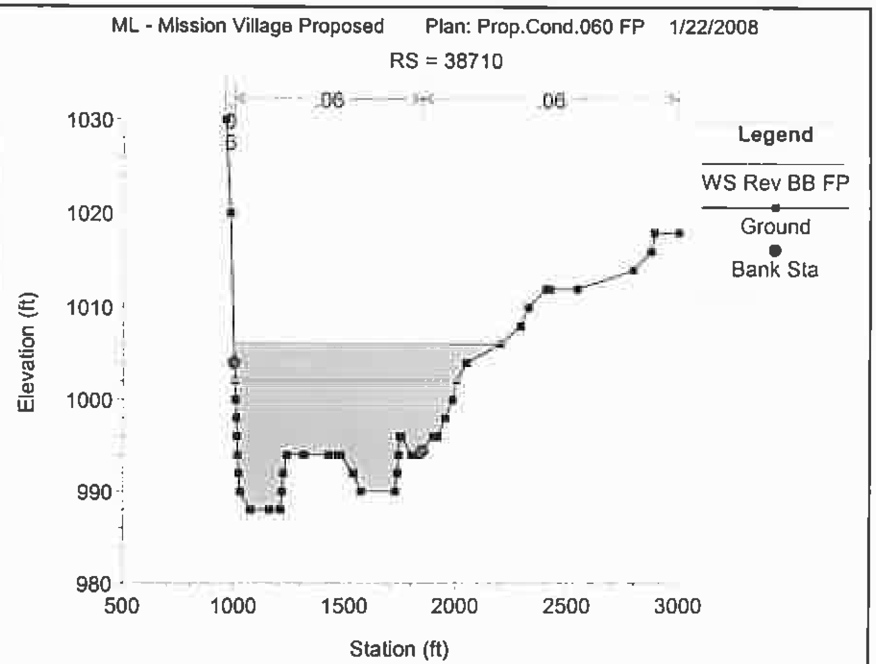

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 39755
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1080
1060
1040
1020
1000
980
1000
1500
2000
2500
3000
3500
4000
4500

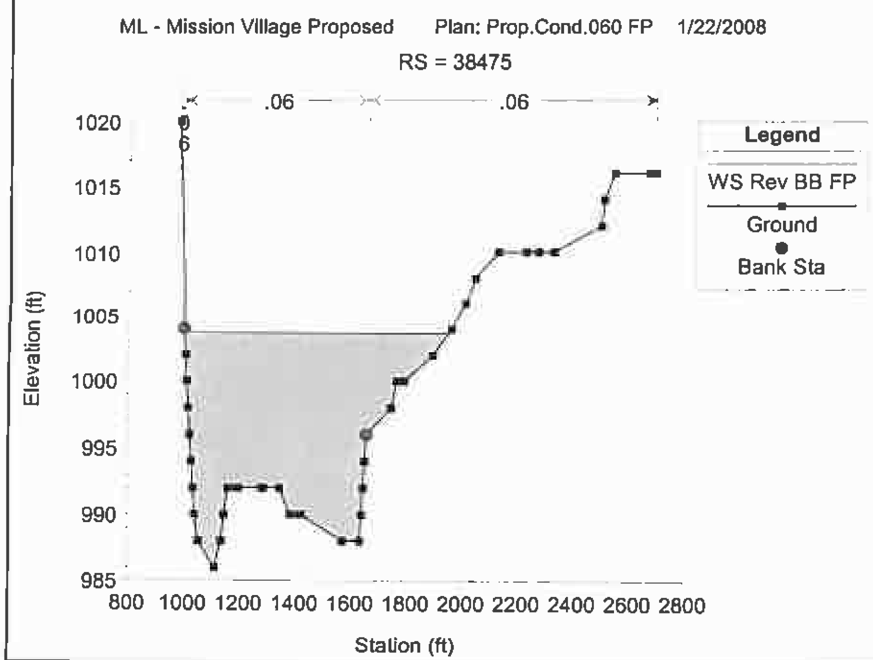

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 39605
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1060
1050
1040
1030
1020
1010
1000
990
1000
1500
2000
2500
3000
3500
4000

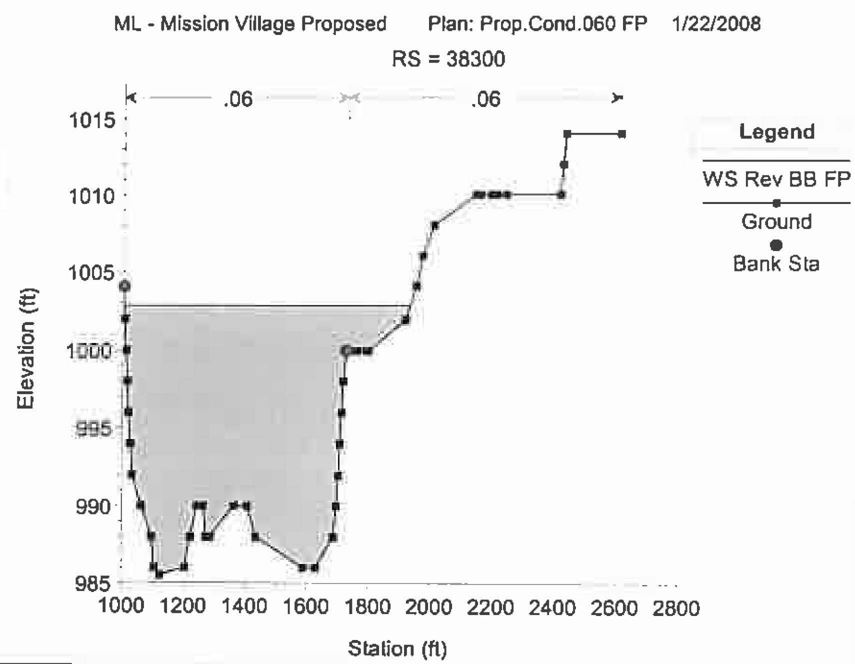

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 39310
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
1000
1500
2000
2500
3000
3500

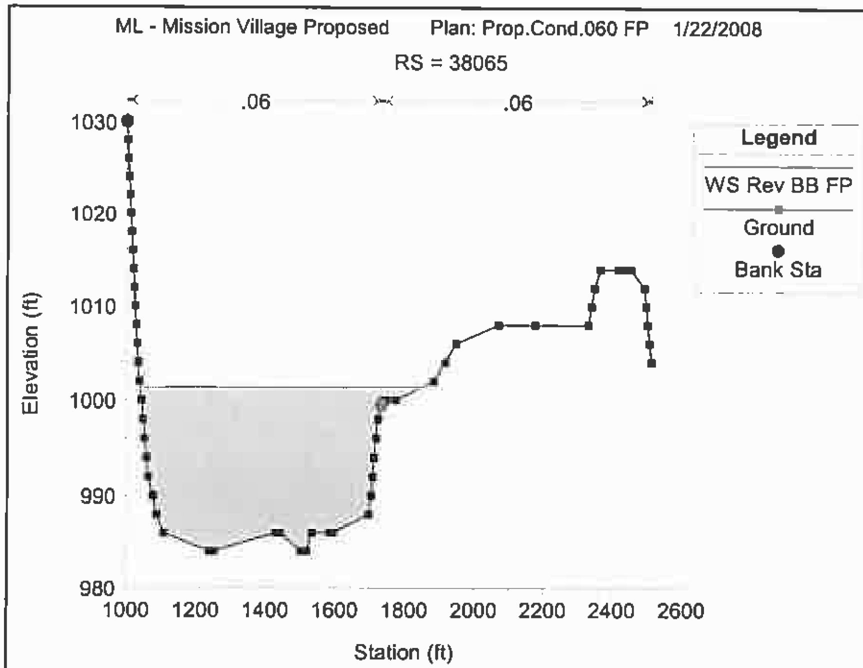

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 39100
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
1000
1500
2000
2500
3000
3500

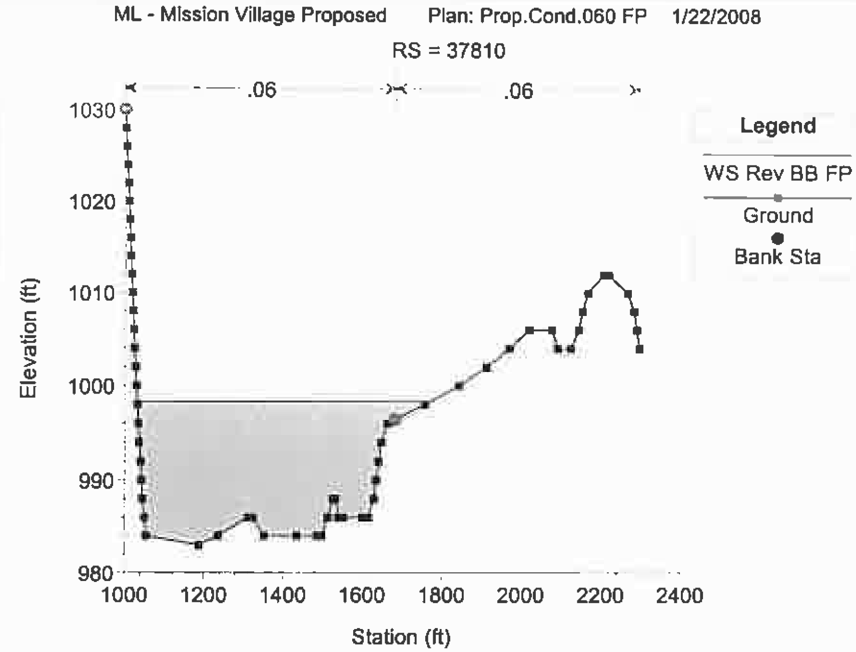

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 38925
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

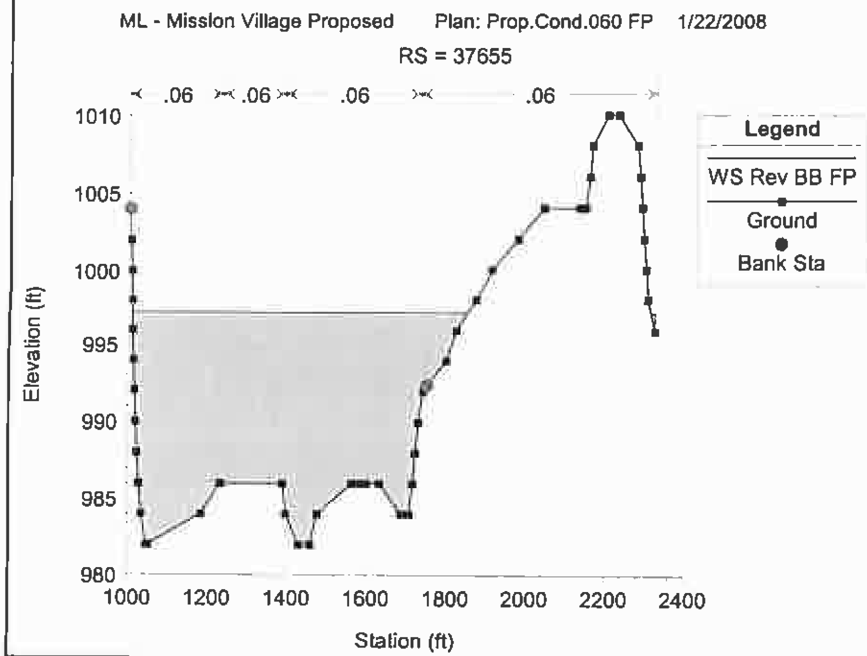

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 38710
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

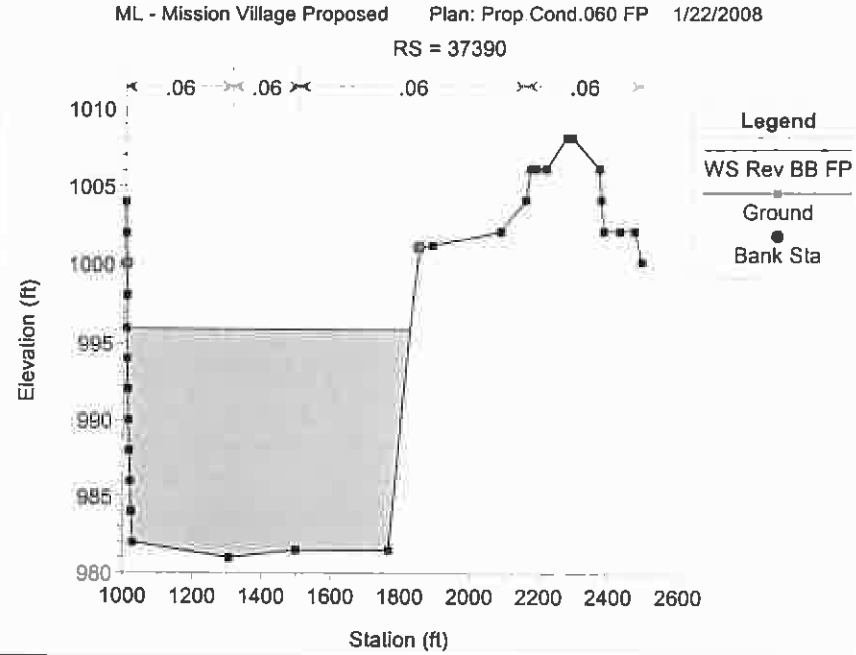

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 38475
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

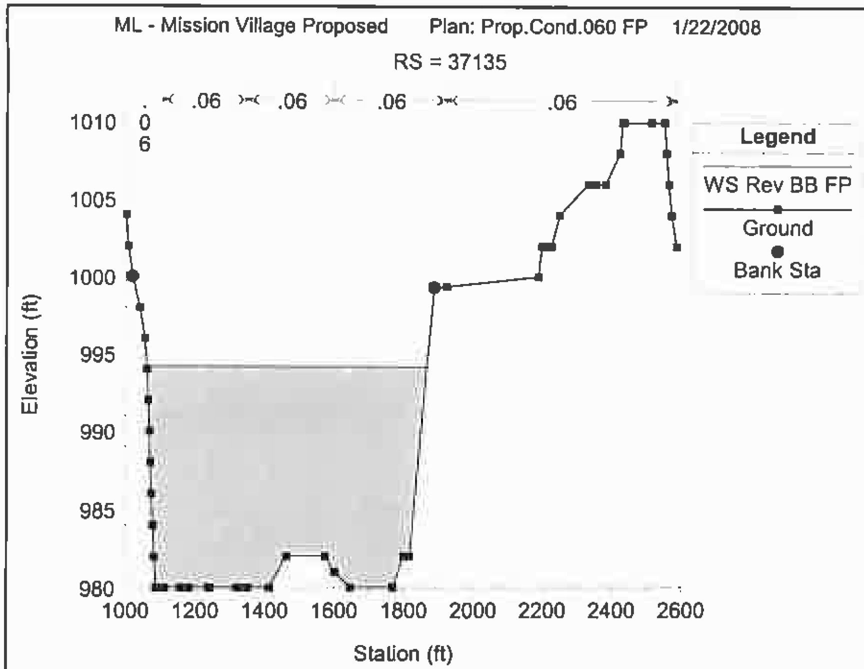

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 38300
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 38065
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

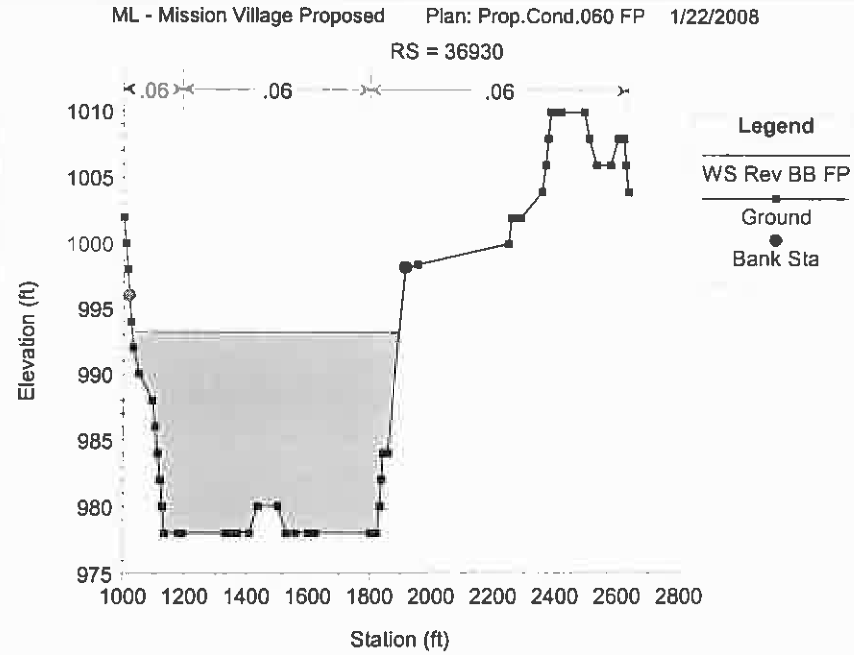

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 37810
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 37655
.06
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

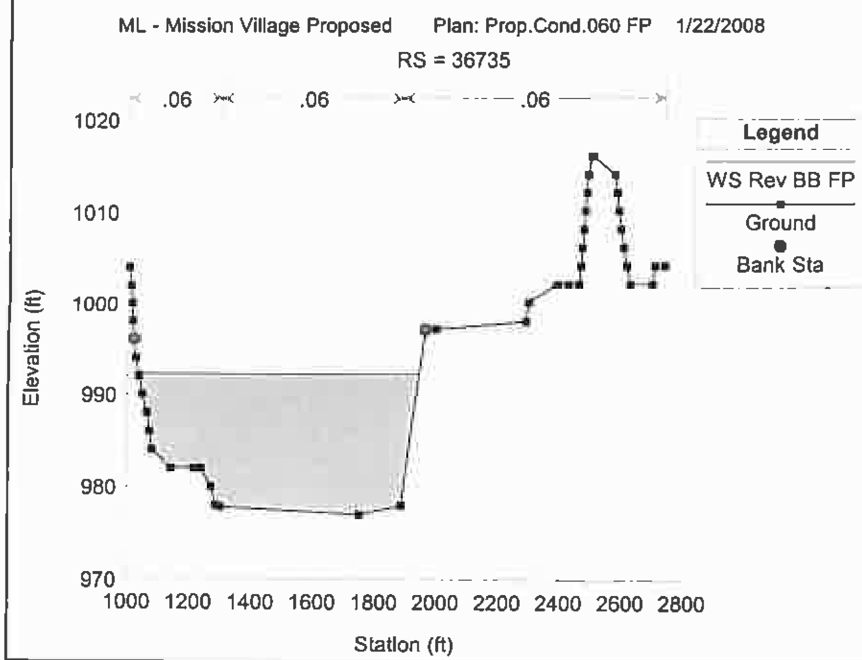

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 37390
.06
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)



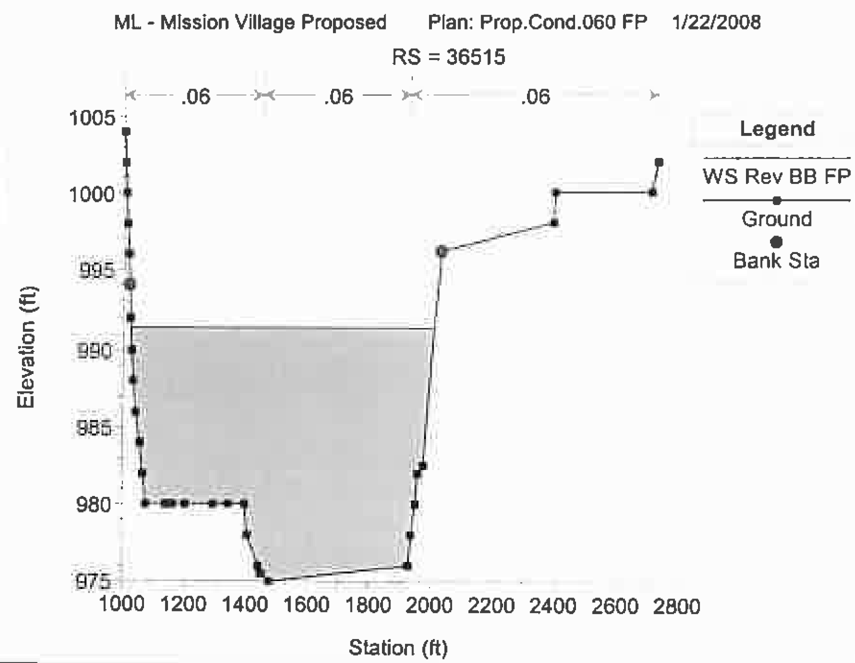
ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 37135
.06
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)



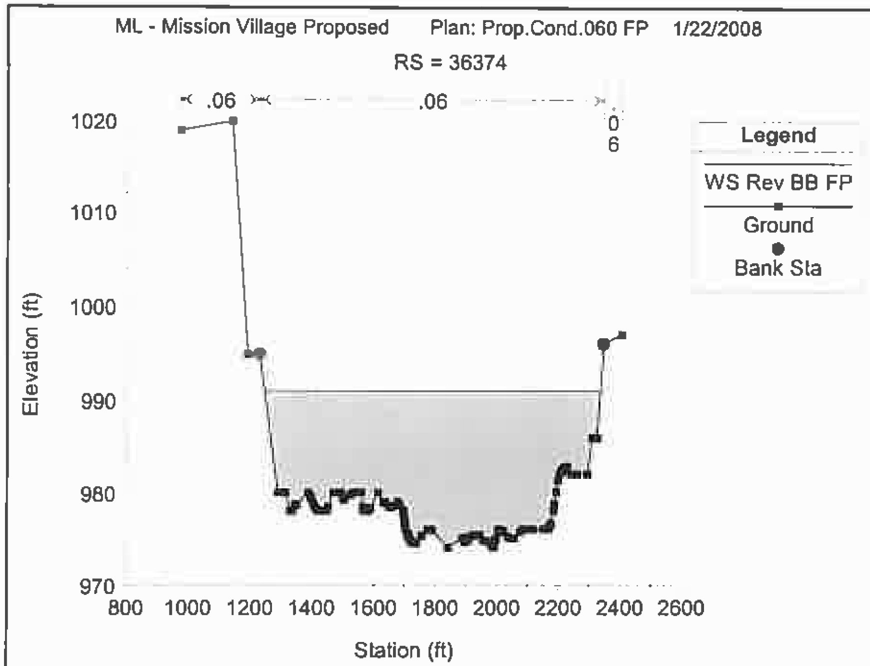
ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36930
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

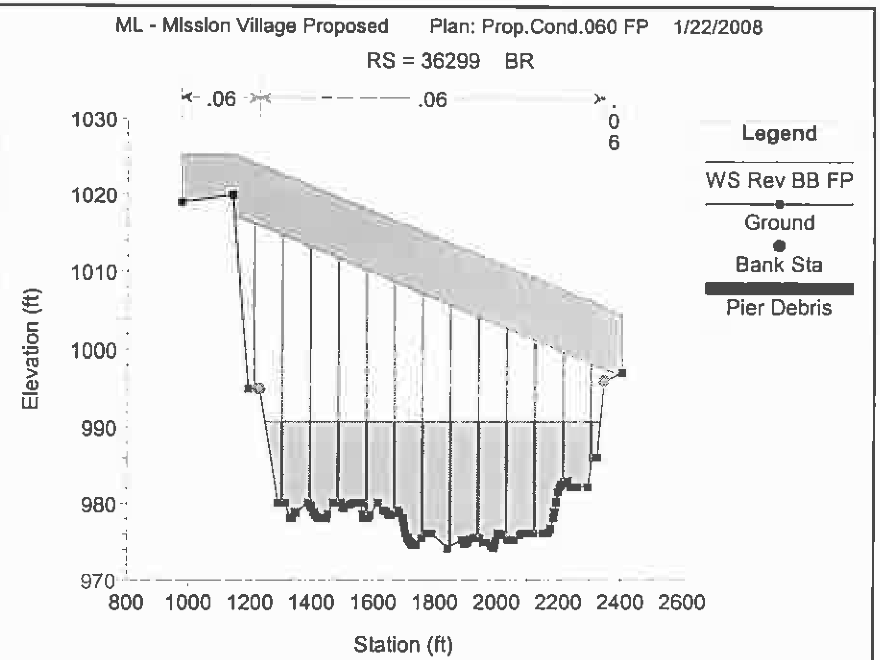


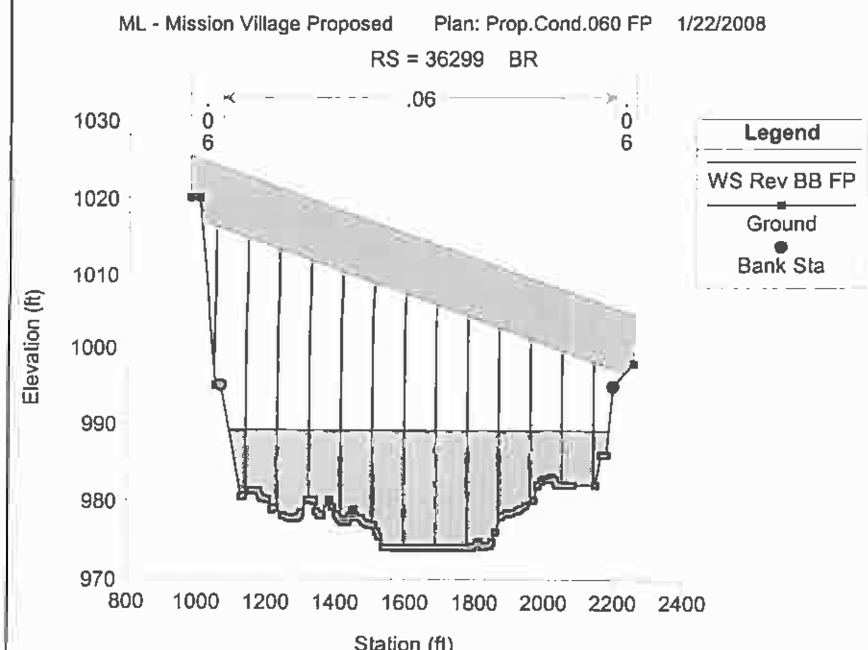
ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36735
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

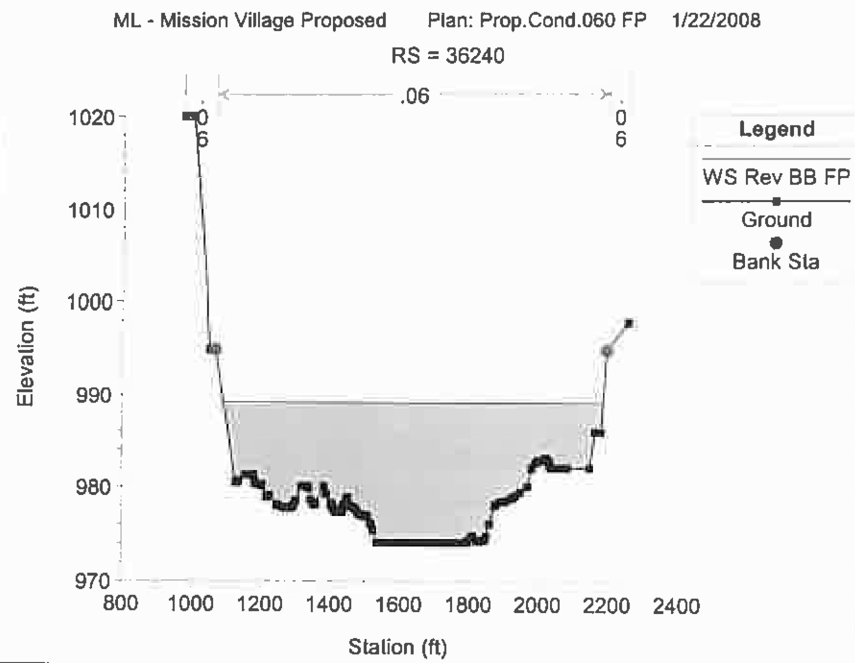


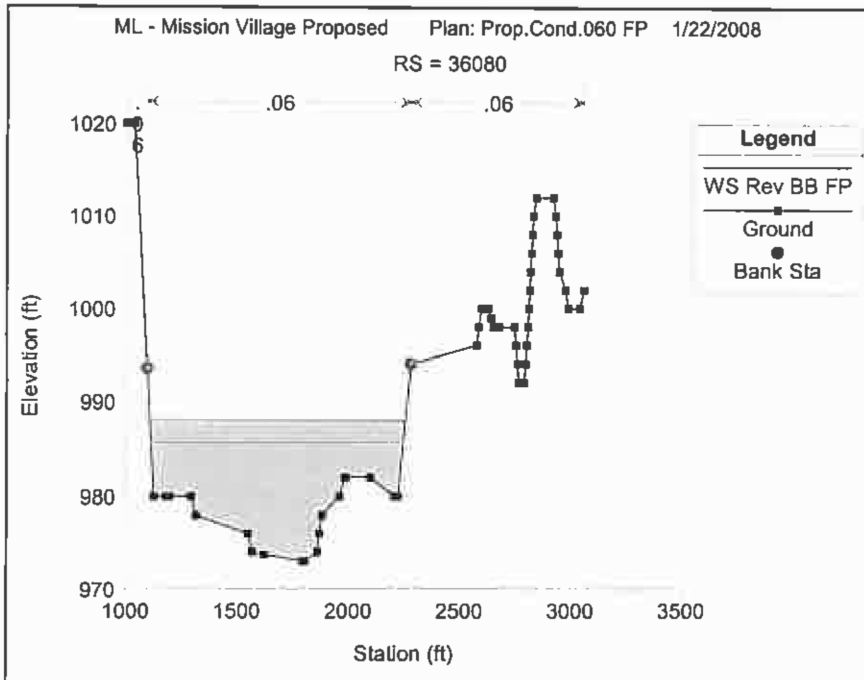
ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36515
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)

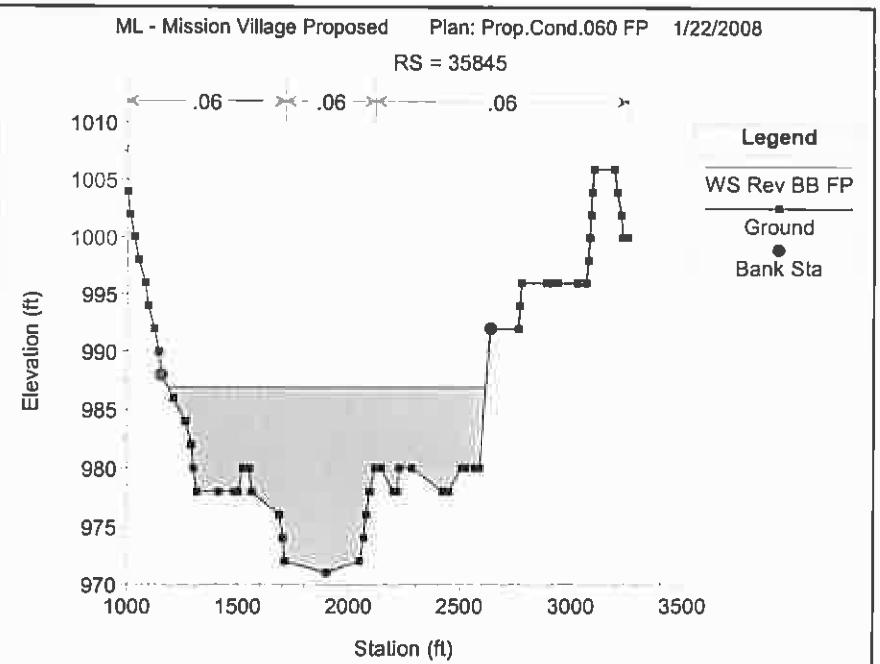

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36374
.06
.06
0
6
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
800 1000 1200 1400 1600 1800 2000 2200 2400 2600

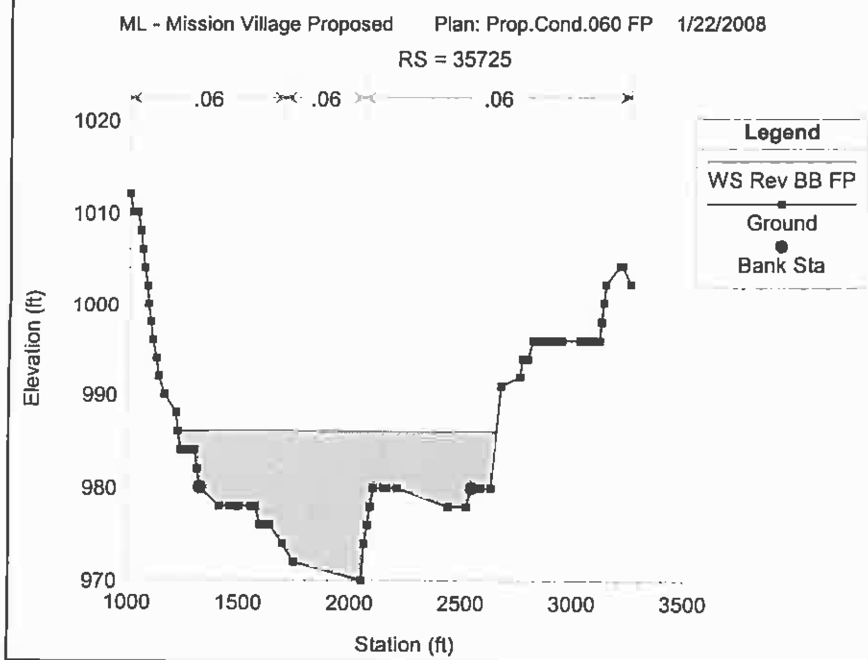

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36299 BR
.06
.06
0
6
Legend
WS Rev BB FP
Ground
Bank Sta
Pier Debris
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
1030
800 1000 1200 1400 1600 1800 2000 2200 2400 2600

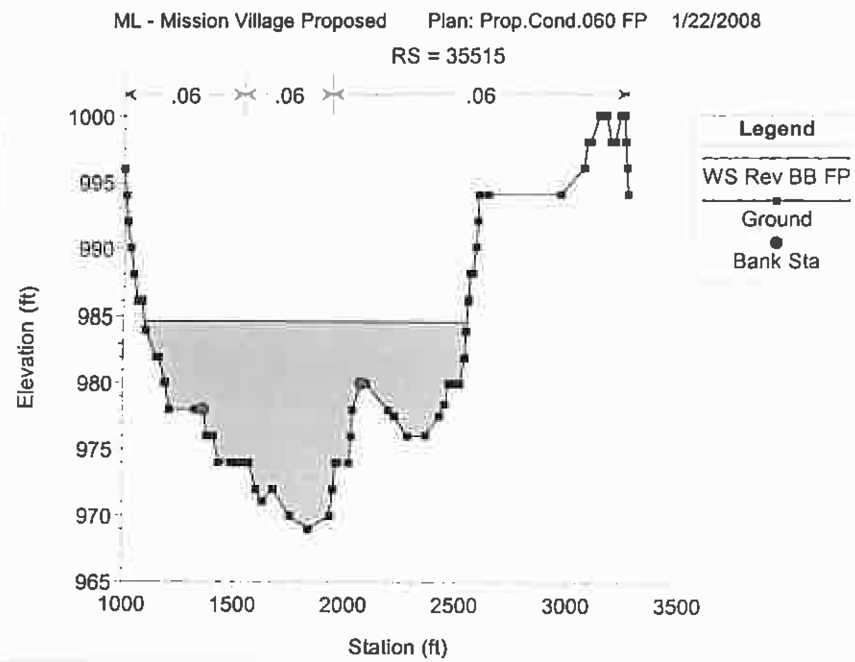

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36299 BR
0
6
.06
0
6
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
1030
800 1000 1200 1400 1600 1800 2000 2200 2400

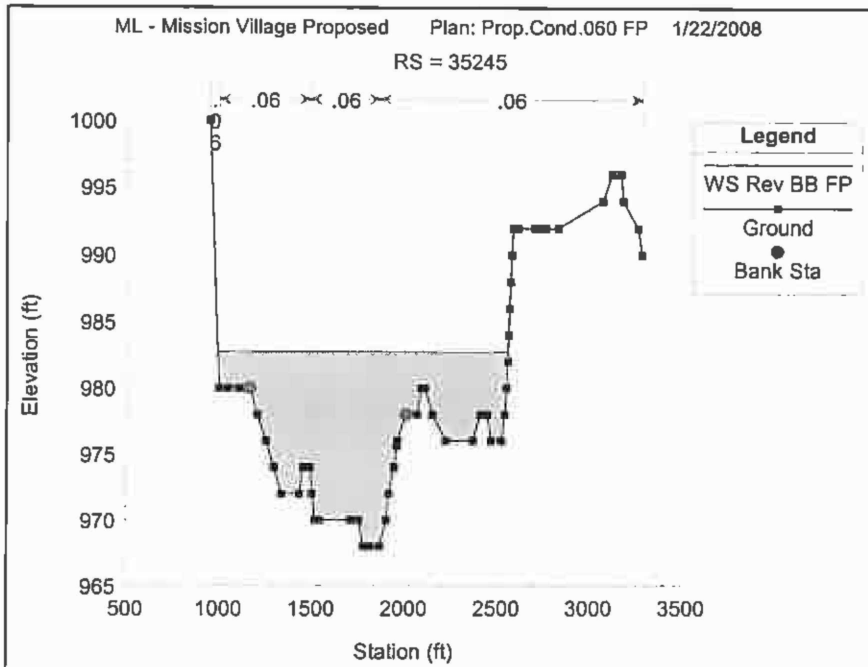

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36240
0
6
.06
0
6
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
800 1000 1200 1400 1600 1800 2000 2200 2400

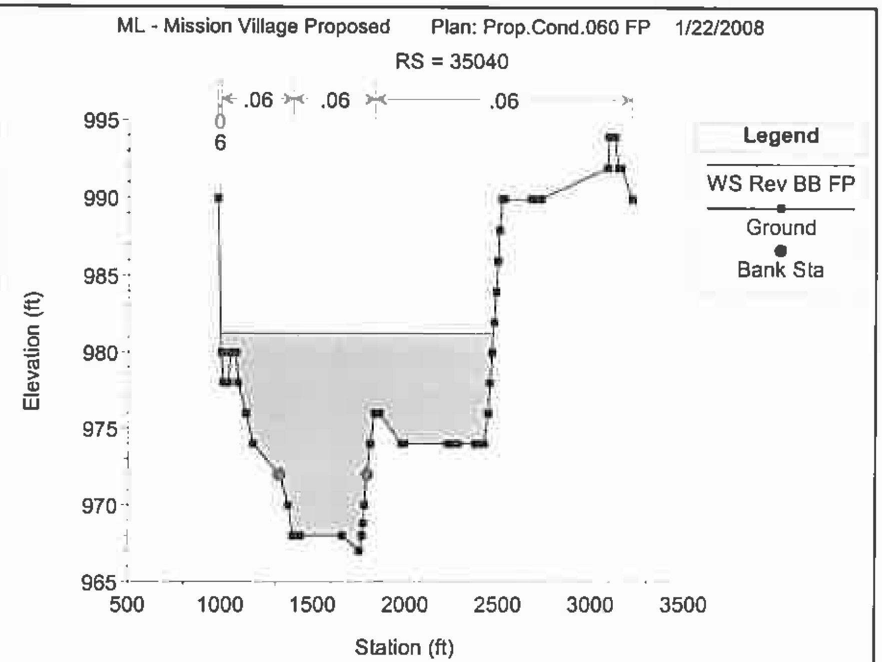

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 36080
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
1000
1500
2000
2500
3000
3500

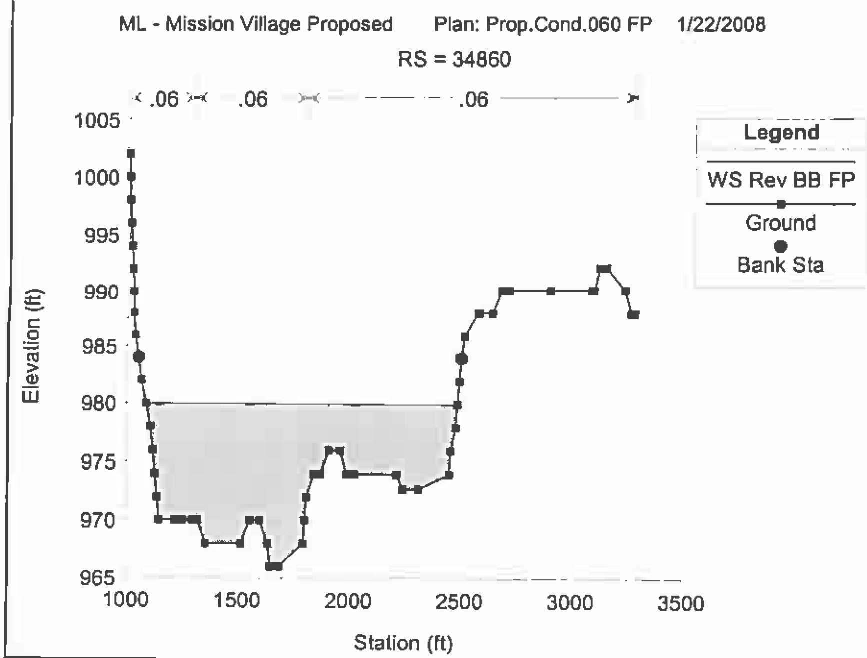

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 35845
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
975
980
985
990
995
1000
1005
1010
1000
1500
2000
2500
3000
3500

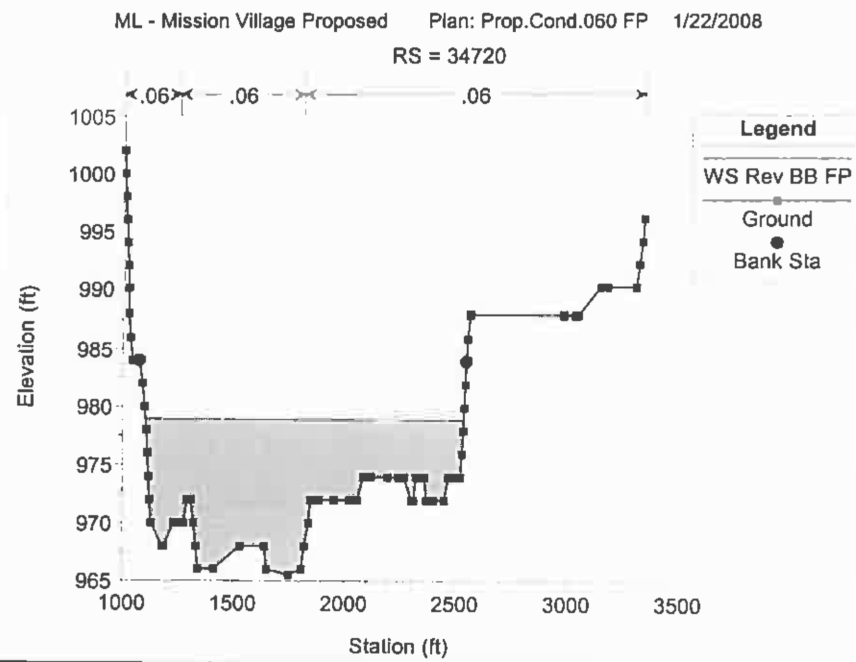

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 35725
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
970
980
990
1000
1010
1020
1000
1500
2000
2500
3000
3500

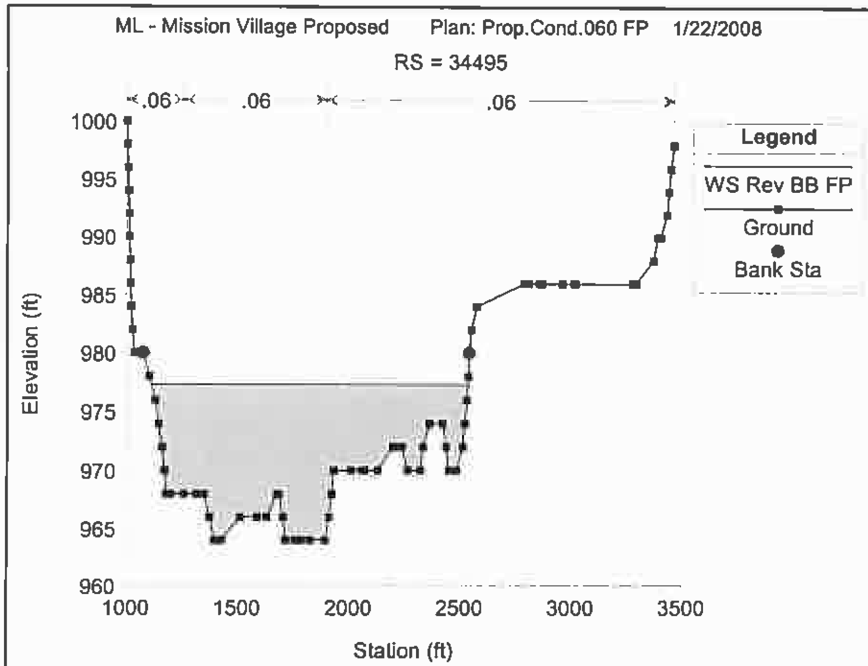

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 35515
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
965
970
975
980
985
990
995
1000
1000
1500
2000
2500
3000
3500

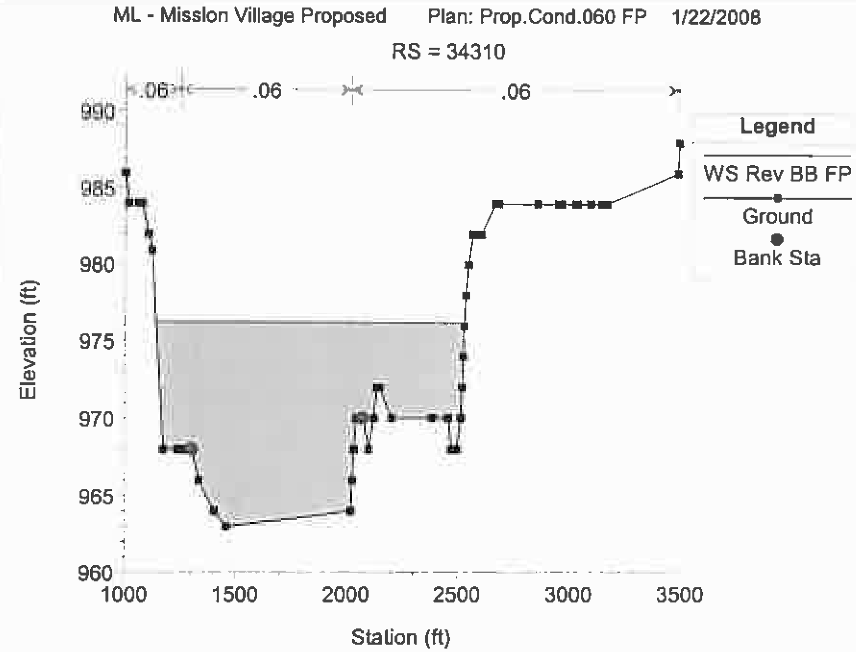

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 35245
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 35040
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 34860
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 34720
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 34495
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
1000
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 34310
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
990
985
980
975
970
965
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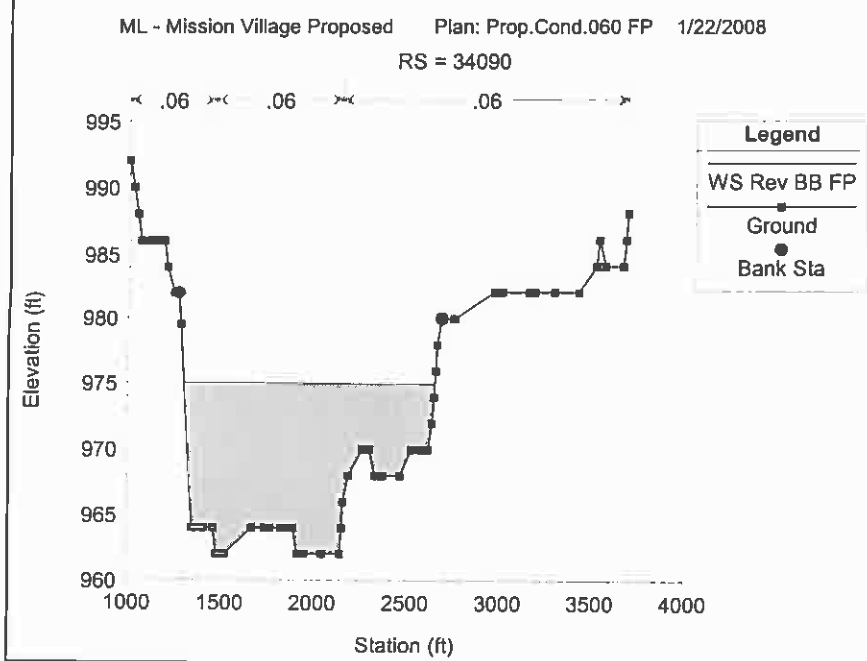
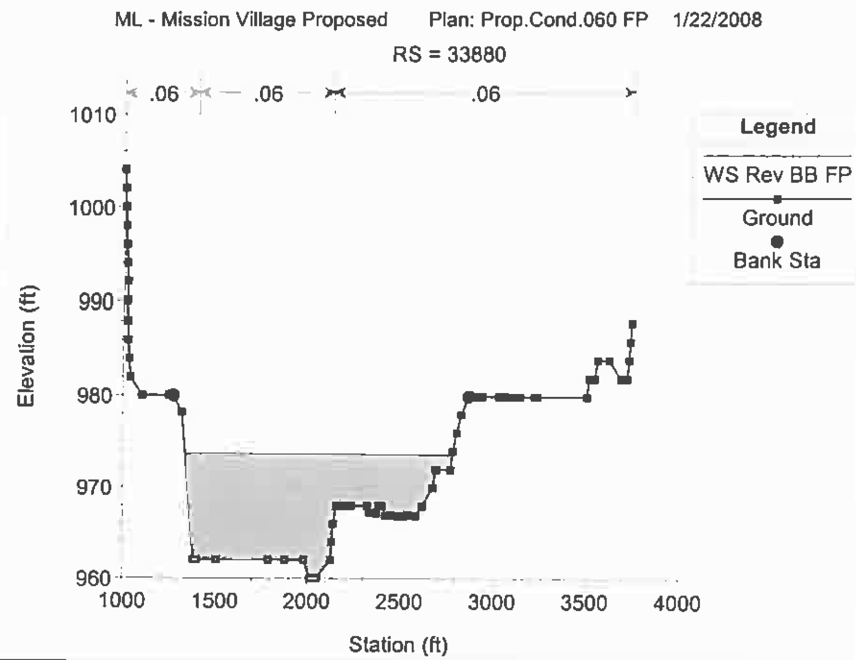
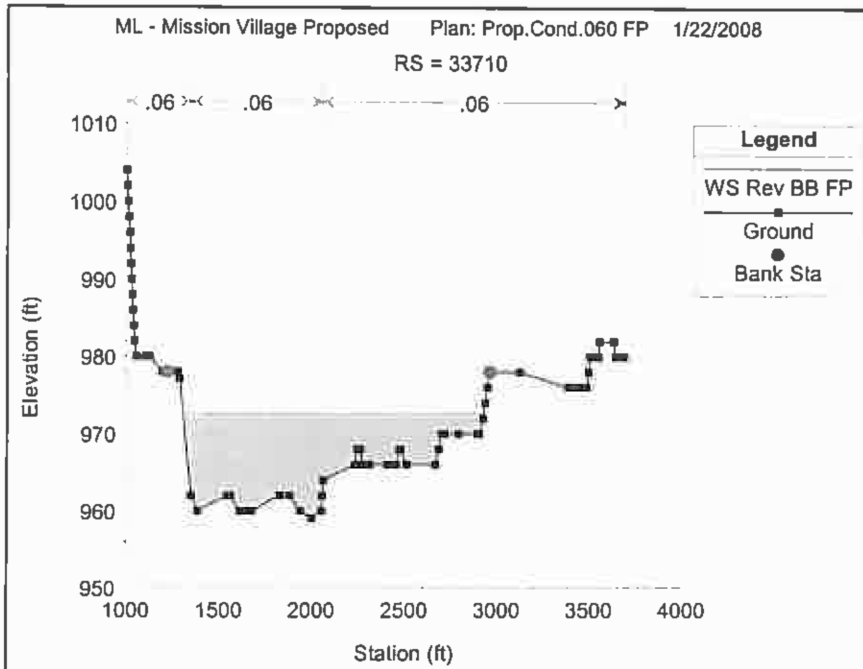
1500
2000
2500
3000
3500
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 34090
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
995
990
985
980
975
970
965
960
1000
1500
2000
2500
3000
3500
4000
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 33880
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
1010
1000
990
980
970
960
1000
1500
2000
2500
3000
3500
4000
Station (ft)


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 33710
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
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960
970
980
990
1000
1010
Station (ft)
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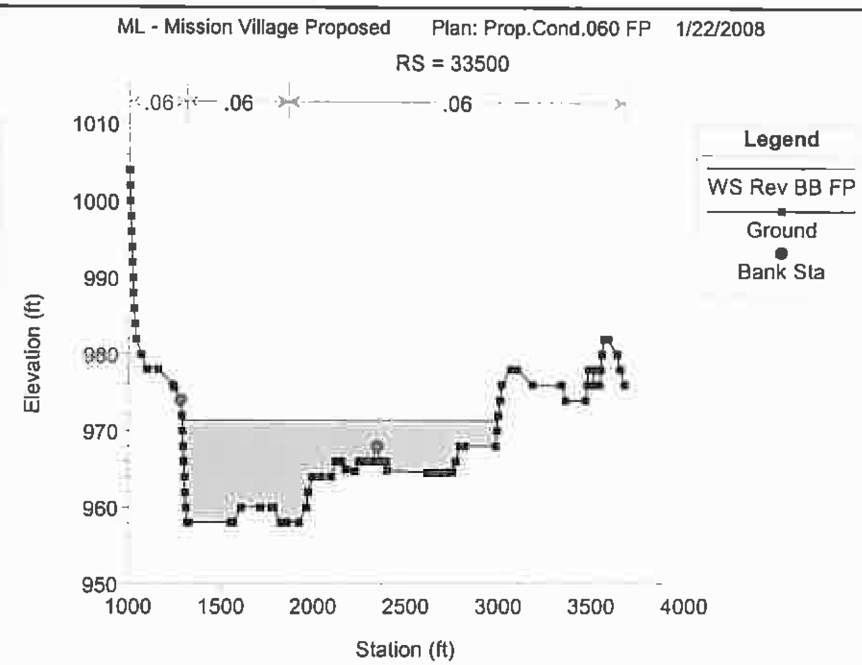
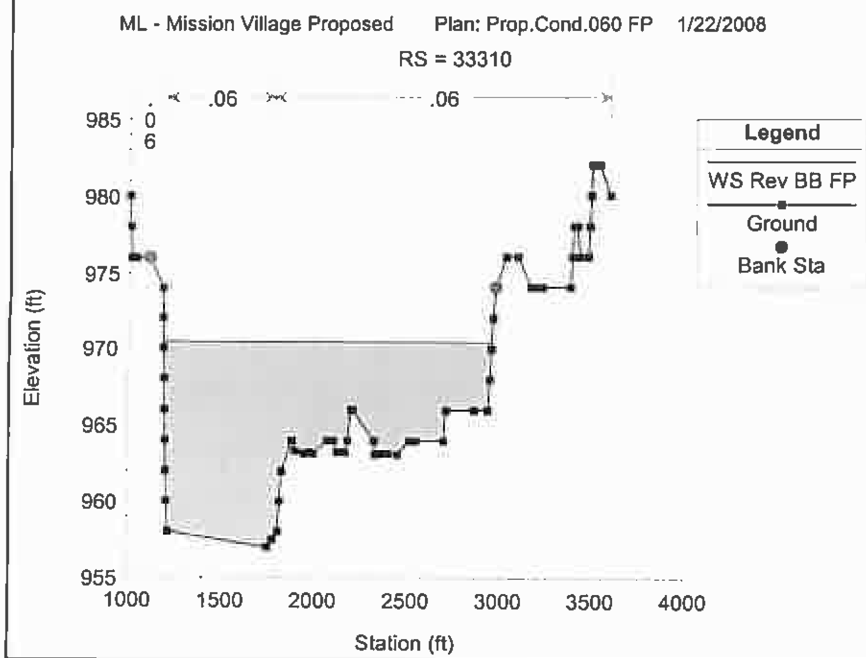
2000
2500
3000
3500
4000


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 33500
.06
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
950
960
970
980
990
1000
1010
Station (ft)
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 33310
0
6
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
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970
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980
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Station (ft)
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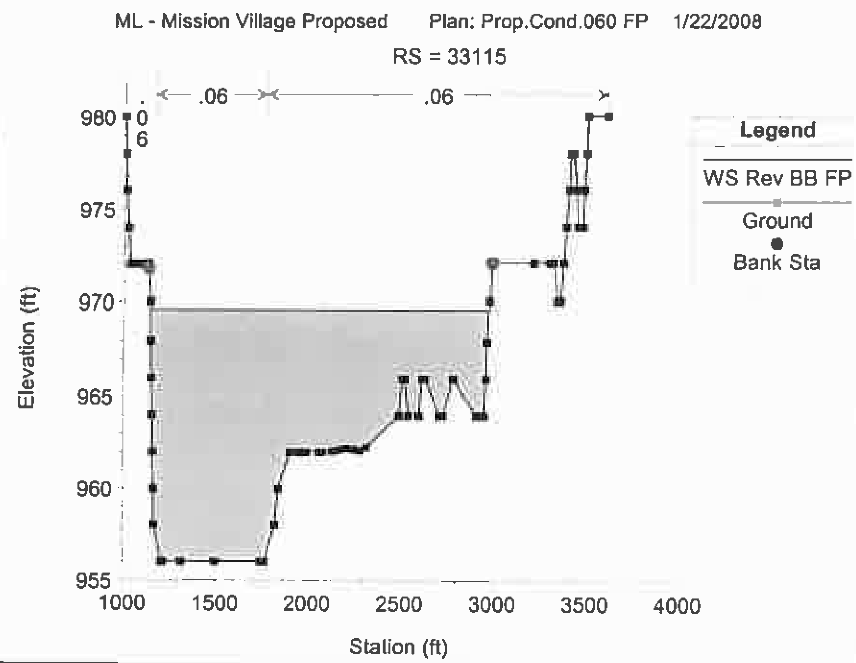
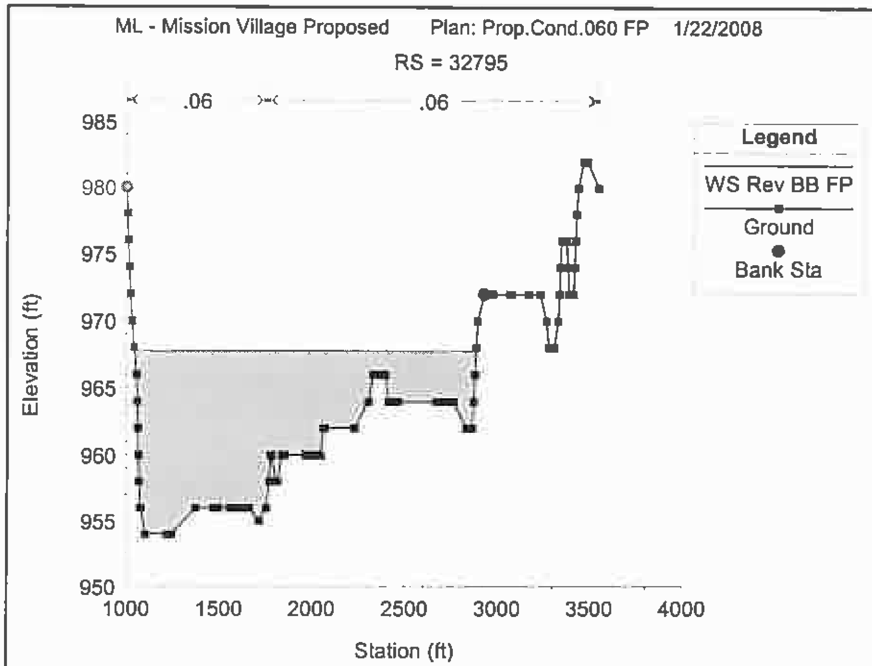
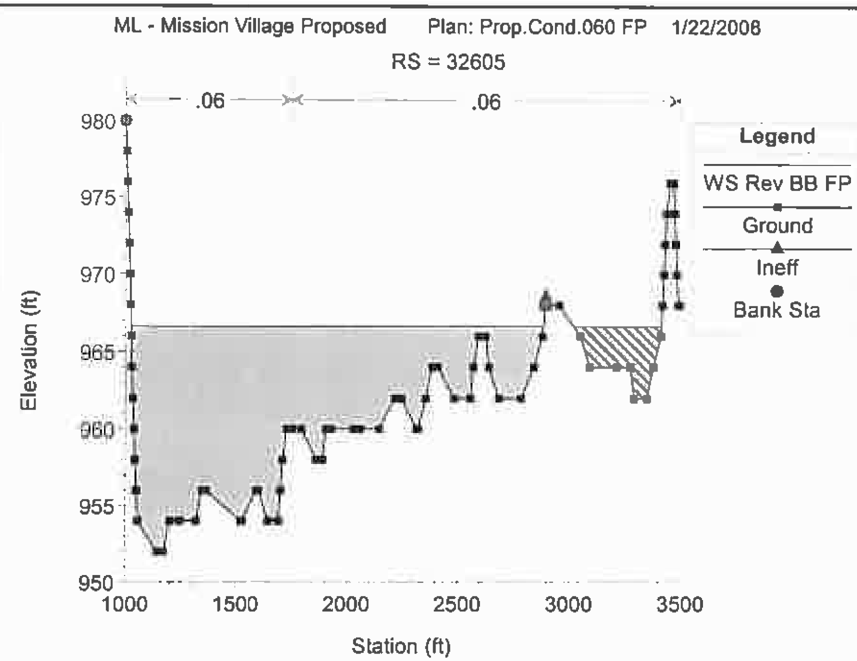
2000
2500
3000
3500
4000

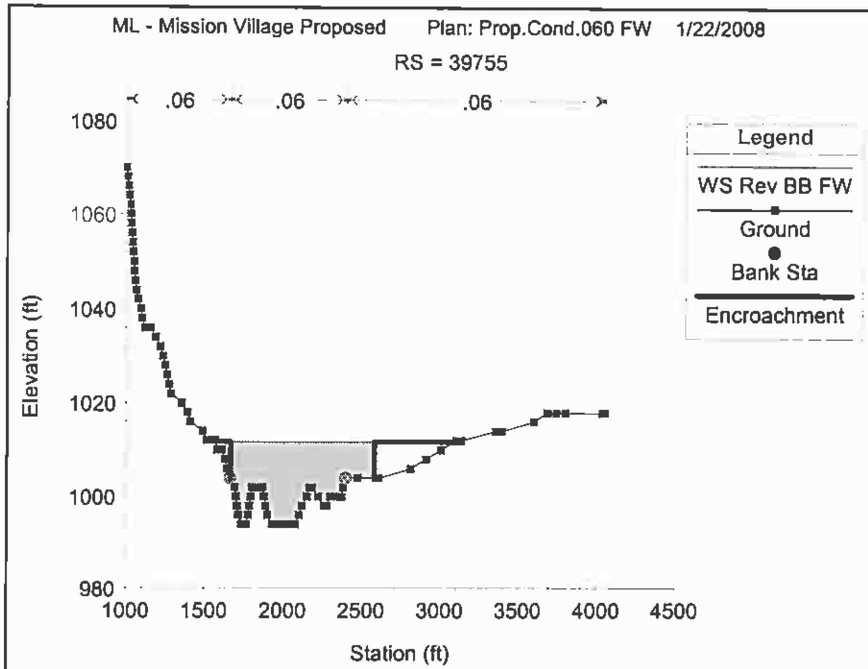

ML - Mission Village Proposed
Plan: Prop.Cond.060 FP
1/22/2008
RS = 33115
0
6
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
955
960
965
970
975
980
Station (ft)
1000
1500
2000
2500
3000
3500
4000

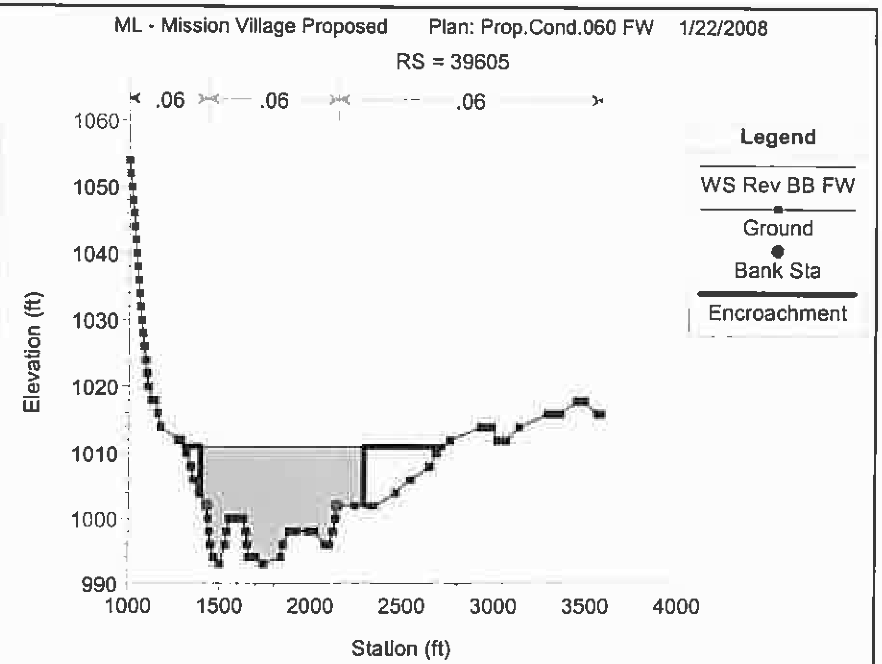

ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 32795
.06
.06
Legend
WS Rev BB FP
Ground
Bank Sta
Elevation (ft)
Station (ft)
985
980
975
970
965
960
955
950
1000
1500
2000
2500
3000
3500
4000


ML - Mission Village Proposed Plan: Prop.Cond.060 FP 1/22/2008
RS = 32605
.06
.06
Legend
WS Rev BB FP
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
980
975
970
965
960
955
950
1000
1500
2000
2500
3000
3500

HEC-RAS Plan: Prop.Cond.06 River: SCR Reach: Project Profile: Rev BB FW

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Project	39755	Rev BB FW	115111.00	994.00	1011.68	1007.26	1013.32	0.005675	10.53	11393.71	916.57	0.50
Project	39605	Rev BB FW	115111.00	993.00	1011.02	1005.81	1012.50	0.004647	10.03	11989.73	895.80	0.46
Project	39310	Rev BB FW	115111.00	992.00	1009.45	1004.51	1011.02	0.004947	10.45	11687.98	879.95	0.48
Project	39100	Rev BB FW	115111.00	990.00	1008.81	1002.09	1010.06	0.003543	9.10	12966.34	863.63	0.41
Project	38925	Rev BB FW	115111.00	989.50	1007.98	1001.85	1009.36	0.004240	9.48	12254.28	849.51	0.44
Project	38710	Rev BB FW	115111.00	988.00	1006.77	1000.69	1008.36	0.004790	10.13	11357.78	756.91	0.46
Project	38475	Rev BB FW	115111.00	986.00	1004.60	1000.03	1006.95	0.007100	12.34	9407.58	649.37	0.57
Project	38300	Rev BB FW	115111.00	985.50	1003.68	997.79	1005.75	0.005684	11.55	9966.64	619.81	0.51
Project	38065	Rev BB FW	115111.00	984.00	1001.91	996.40	1004.29	0.006403	12.39	9291.23	569.63	0.54
Project	37810	Rev BB FW	115111.00	983.00	999.15	995.73	1002.21	0.009956	14.02	8208.76	586.94	0.66
Project	37655	Rev BB FW	115111.00	982.00	997.97	994.40	1000.59	0.009179	12.98	8870.39	667.51	0.63
Project	37390	Rev BB FW	115111.00	981.00	996.61	990.95	998.50	0.005581	11.04	10428.11	686.48	0.50
Project	37135	Rev BB FW	115111.00	980.00	994.94	990.03	996.97	0.006430	11.45	10055.19	706.67	0.53
Project	36930	Rev BB FW	115111.00	978.00	993.96	988.03	995.72	0.005128	10.67	10789.88	713.69	0.48
Project	36735	Rev BB FW	115111.00	977.00	993.07	987.33	994.67	0.004979	10.16	11329.11	783 97	0.47
Project	36515	Rev BB FW	115111.00	975.00	992.47	985.45	993.66	0.003446	8.75	13161.09	867.01	0.40
Project	36374	Rev BB FW	115111.00	974.11	992.02	985.41	993.21	0.003646	8.78	13110.94	897.25	0 40
Project	36299		Bridge									
Project	36240	Rev BB FW	115111.00	974.11	990.22	985.58	991.95	0.006160	10.54	10921.13	843.12	0.52
Project	36080	Rev BB FW	116236.00	973.00	988.95	985.20	990.89	0.007682	11.19	10390.79	870.91	0.57
Project	35845	Rev BB FW	116236.00	971.00	987.57	983.49	989.20	0.006093	10.25	11334.75	968.72	0.53
Project	35725	Rev BB FW	116236.00	970.00	986.69	983.11	988.41	0.006773	10.52	11045.66	1001.20	0.56
Project	35515	Rev BB FW	116236.00	969.00	985.54	981.73	987.07	0.005697	10.42	12011.26	1066.52	0.51
Project	35245	Rev BB FW	116236.00	968.00	983.59	980.52	985.34	0.007070	10.96	11265.44	1091.50	0.56
Project	35040	Rev BB FW	116236.00	967.00	982.27	979.16	983.93	0.006354	11.44	11760.67	1105.48	0.54
Project	34860	Rev BB FW	116236.00	966.00	980.99	977.89	982.71	0.007657	10.50	11067.79	1090.73	0.58
Project	34720	Rev BB FW	116236.00	965.50	979.88	976.66	981.62	0.007652	10.57	10996.02	1053.47	0.58
Project	34495	Rev BB FW	116236.00	964.00	978.36	974.64	979.99	0.006722	10.24	11350.80	1027.57	0.54
Project	34310	Rev BB FW	116236.00	963.00	977.27	973.36	978.80	0.005636	10.37	12021.91	1057.50	0.50
Project	34090	Rev BB FW	116236.00	962.00	975.92	972.25	977.48	0.006571	10.01	11609.18	1077.58	0 54
Project	33880	Rev BB FW	116236.00	960.00	974.61	971.04	976.09	0.006503	9.78	11884.63	1144.22	0.53
Project	33710	Rev BB FW	116236.00	959.00	973.59	969.88	974.96	0.006169	9.39	12376.83	1202.47	0.52
Project	33500	Rev BB FW	116236.00	958.00	972.35	968.78	973.65	0.006066	9.46	12870.50	1275.35	0.50
Project	33310	Rev BB FW	116236.00	957.00	971.34	967.47	972.54	0.005429	8.80	13202.09	1304.27	0.49
Project	33115	Rev BB FW	116236.00	956.00	970.50	965.83	971.50	0.004510	8.02	14500.88	1349.00	0.43
Project	32795	Rev BB FW	116236.00	954.00	968.74	964.86	969.92	0.005437	8.73	13321.63	1369.37	0.49
Project	32605	Rev BB FW	116236.00	952.00	967.61	964.28	968.82	0.006002	8.81	13190.46	1427.22	0.51


ML - Mission Village Proposed
Plan: Prop.Cond.060 FW
1/22/2008
RS = 39755
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1080
1060
1040
1020
1000
980
1000
1500
2000
2500
3000
3500
4000
4500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.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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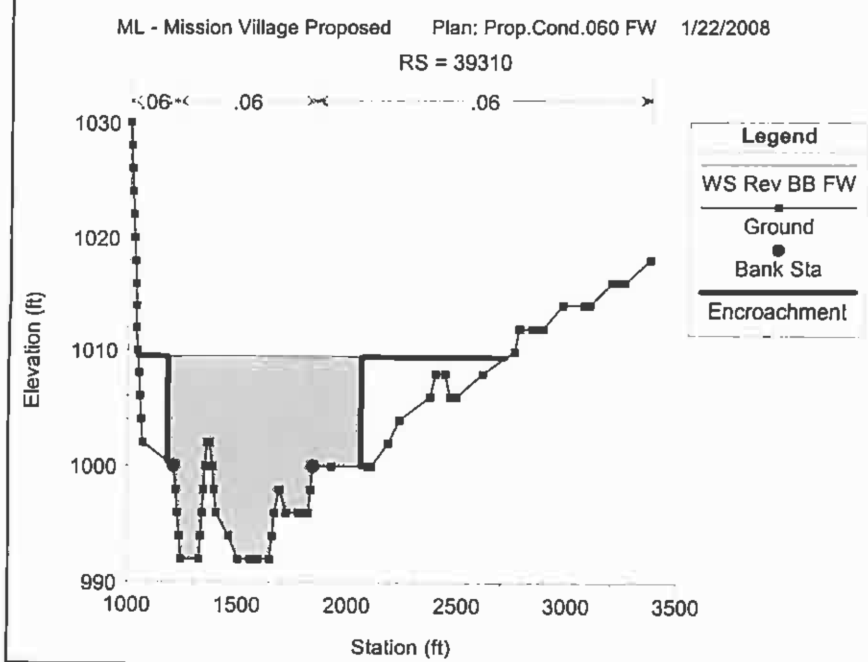
1050
1040
1030
1020
1010
1000
990
1000
1500
2000
2500
3000
3500
4000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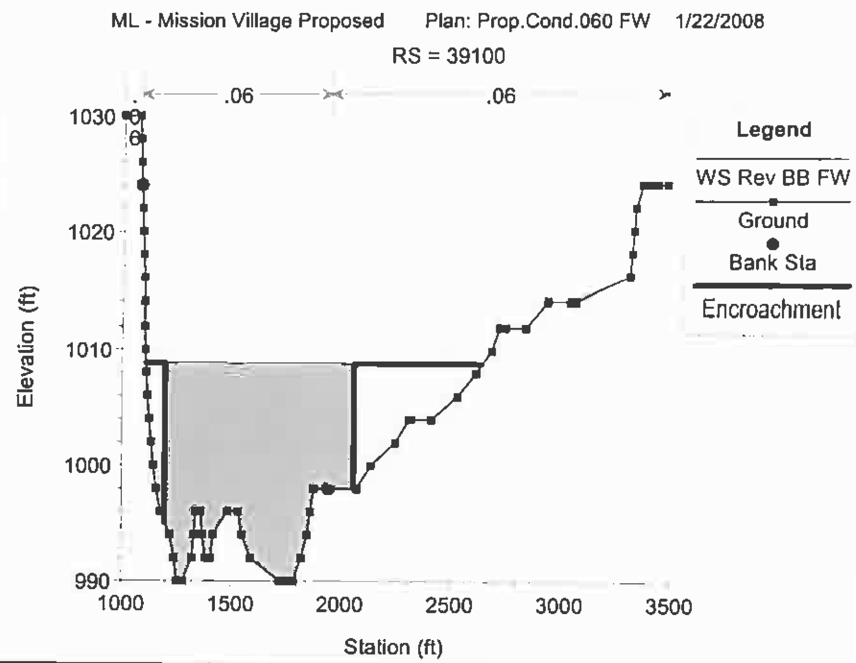
Plan: Prop.Cond.060 FW
1/22/2008
RS = 39310
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
1000
1500
2000
2500
3000
3500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Plan: Prop.Cond.060 FW
1/22/2008
RS = 39100
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.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1030
1020
1010
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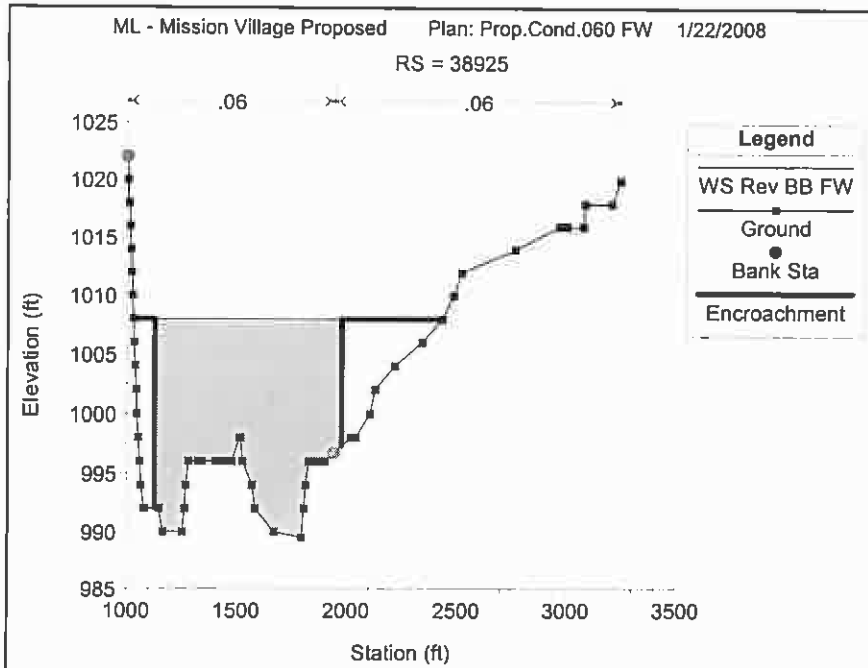
990
1000
1500
2000
2500
3000
3500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RS = 38925
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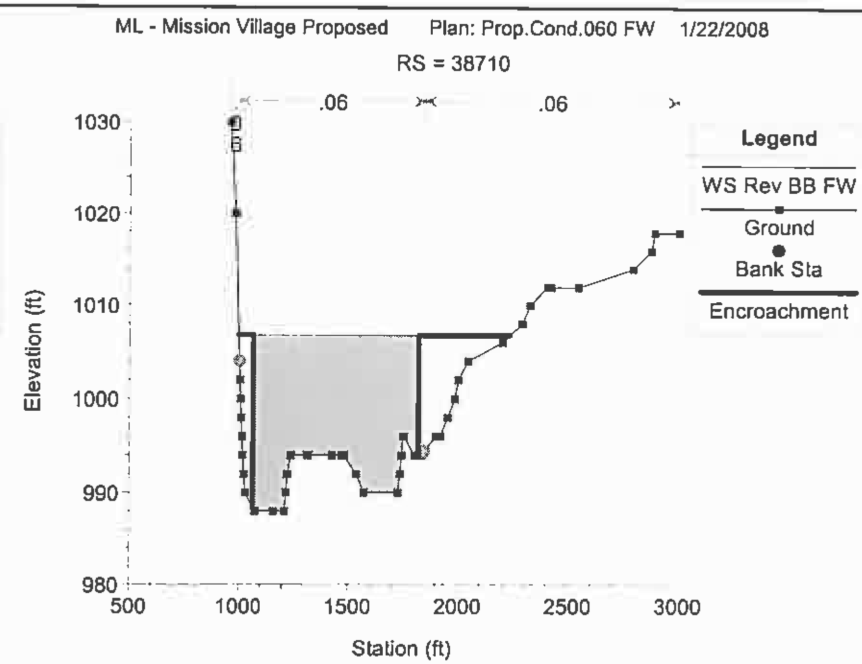
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1025
1020
1015
1010
1005
1000
995
990
985
1000
1500
2000
2500
3000
3500
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 38710
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.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
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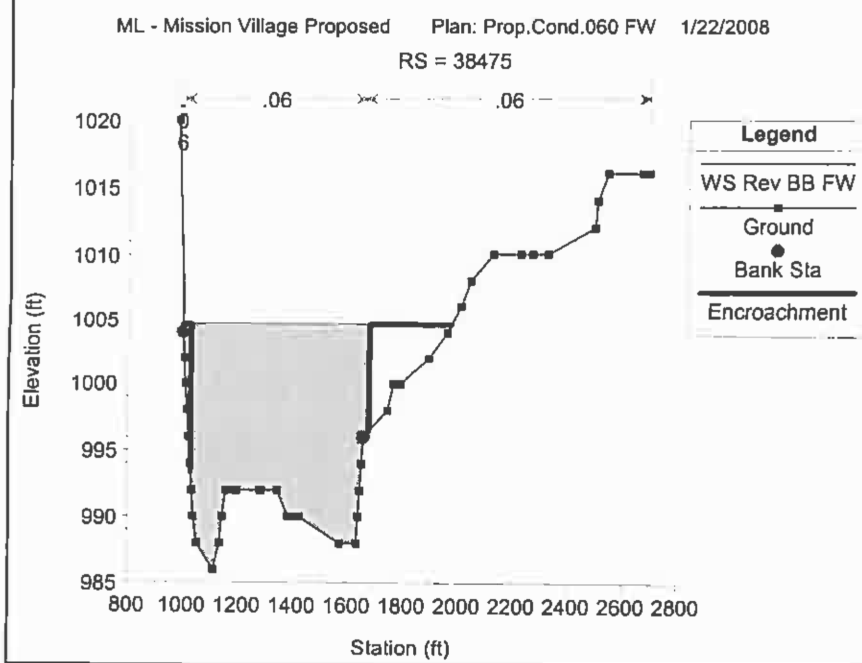
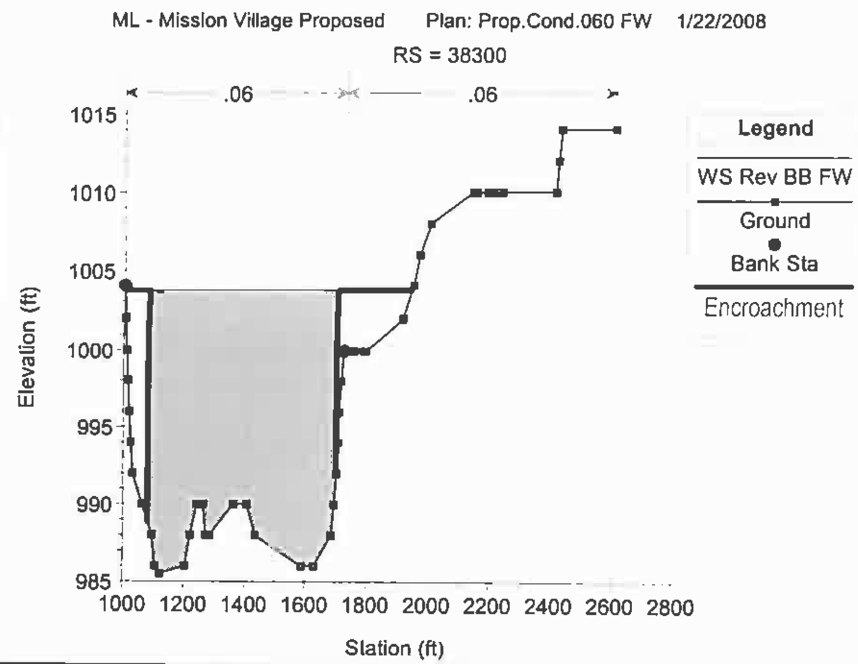
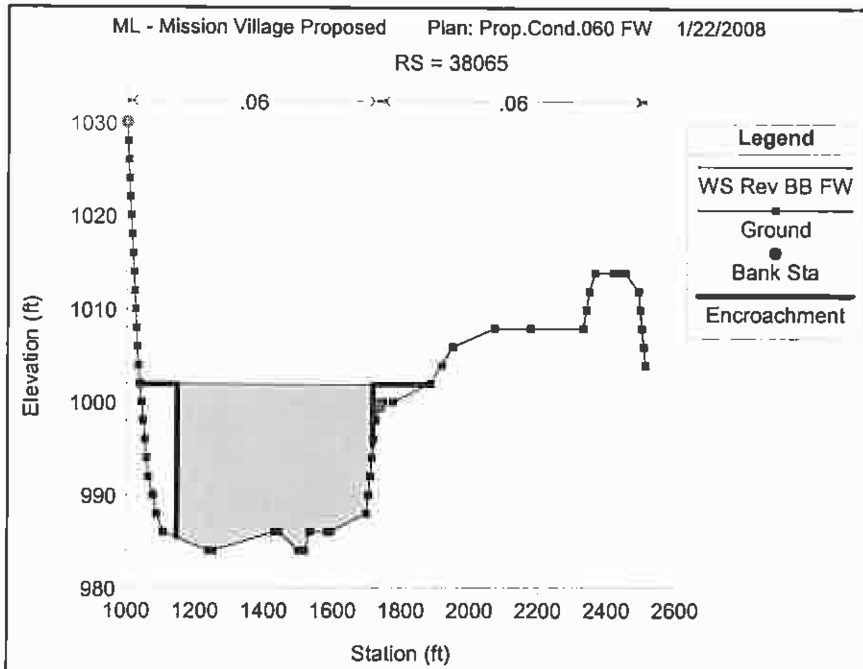
1030
1020
1010
1000
990
980
500
1000
1500
2000
2500
3000
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 38475
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1020
1015
1010
1005
1000
995
990
985
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 38300
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1015
1010
1005
1000
995
990
985
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)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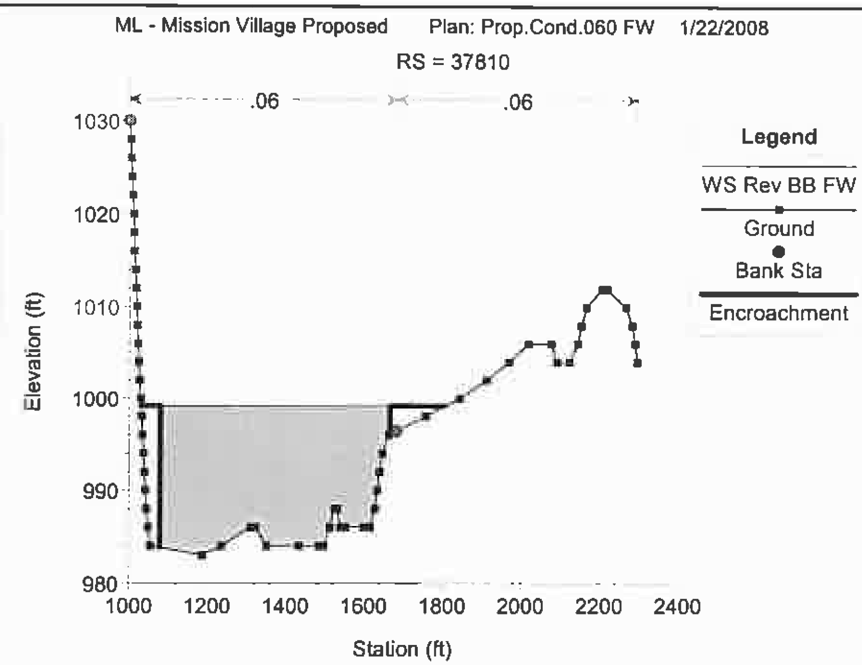
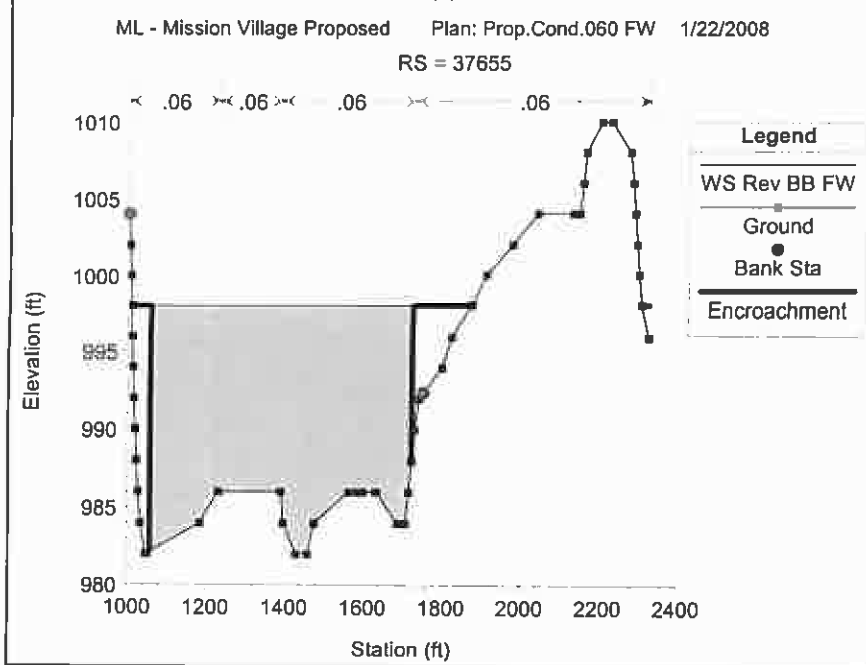
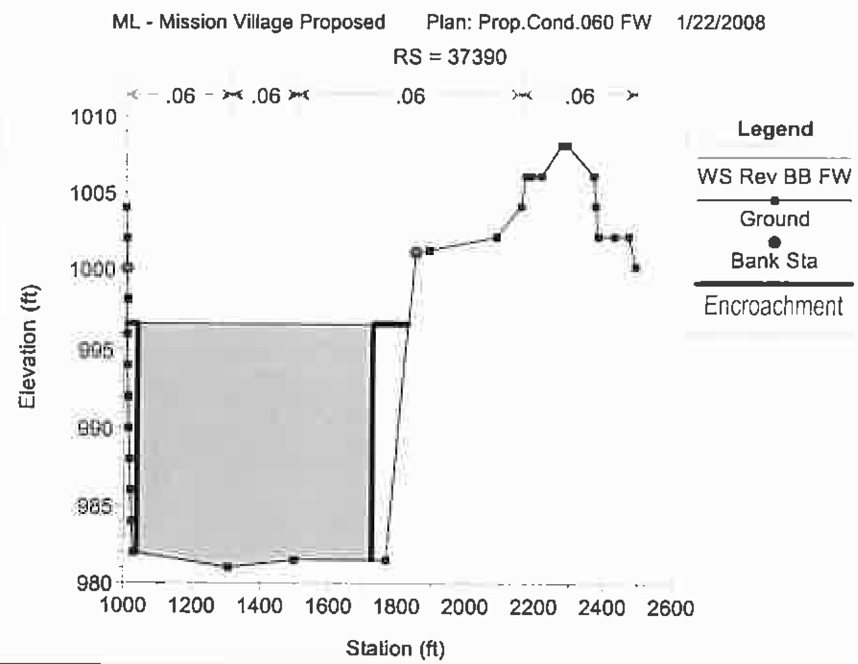
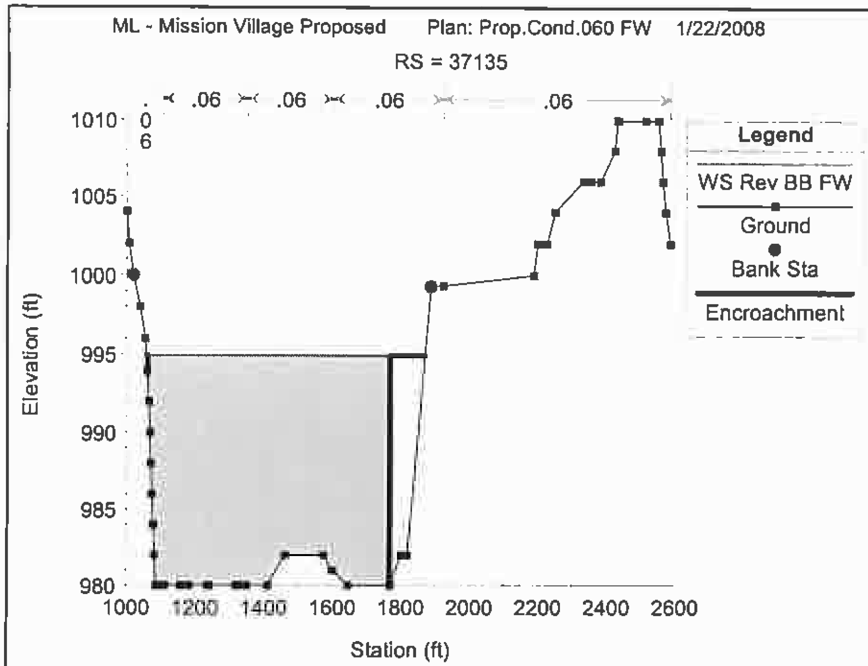
RS = 38065
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1030
1020
1010
1000
990
980
1000 1200 1400 1600 1800 2000 2200 2400 2600
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 37810
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1030
1020
1010
1000
990
980
1000 1200 1400 1600 1800 2000 2200 2400
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 37655
.06 .06 .06 .06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1010
1005
1000
995
990
985
980
1000 1200 1400 1600 1800 2000 2200 2400
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 37390
.06 .06 .06 .06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1010
1005
1000
995
990
985
980
1000 1200 1400 1600 1800 2000 2200 2400 2600
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 37135
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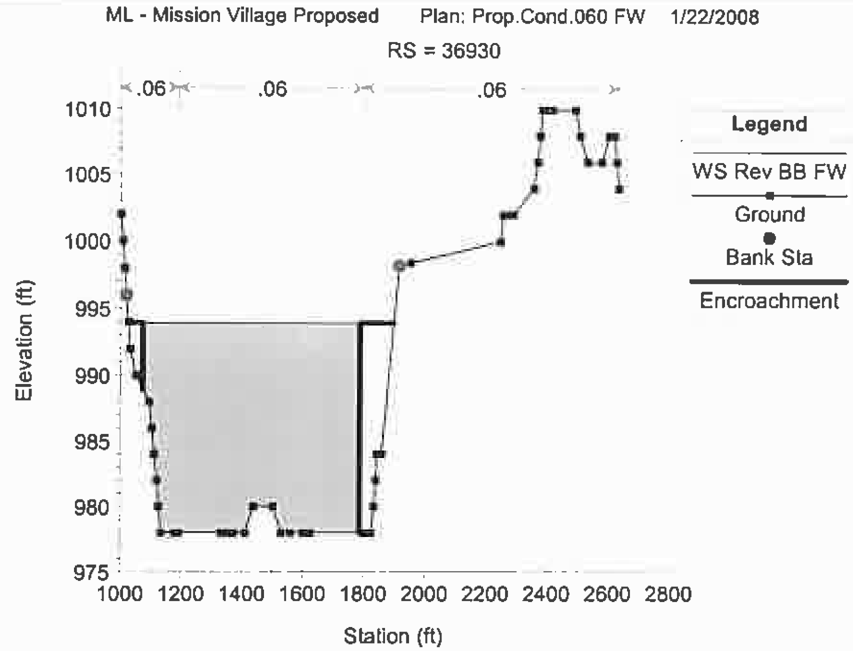
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)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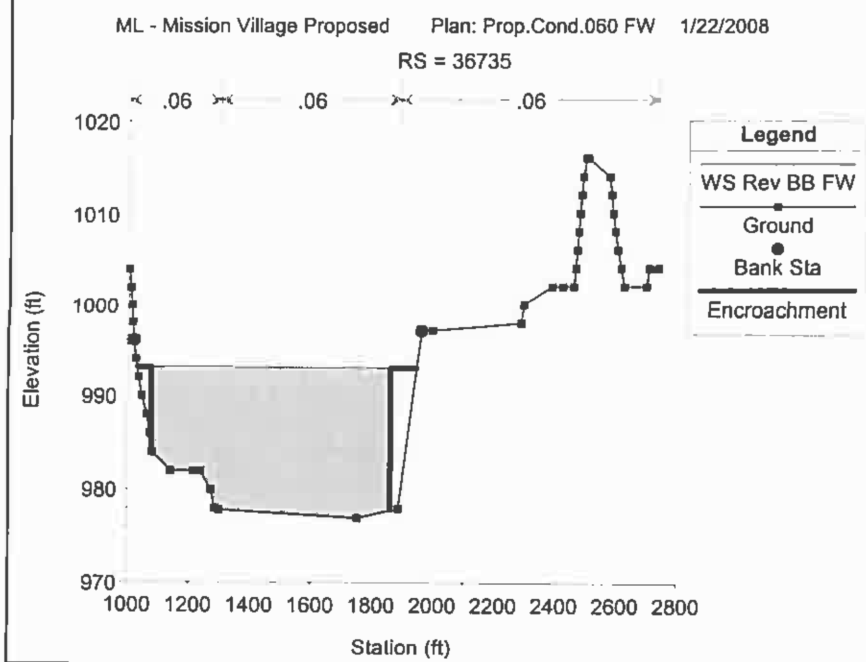
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36735
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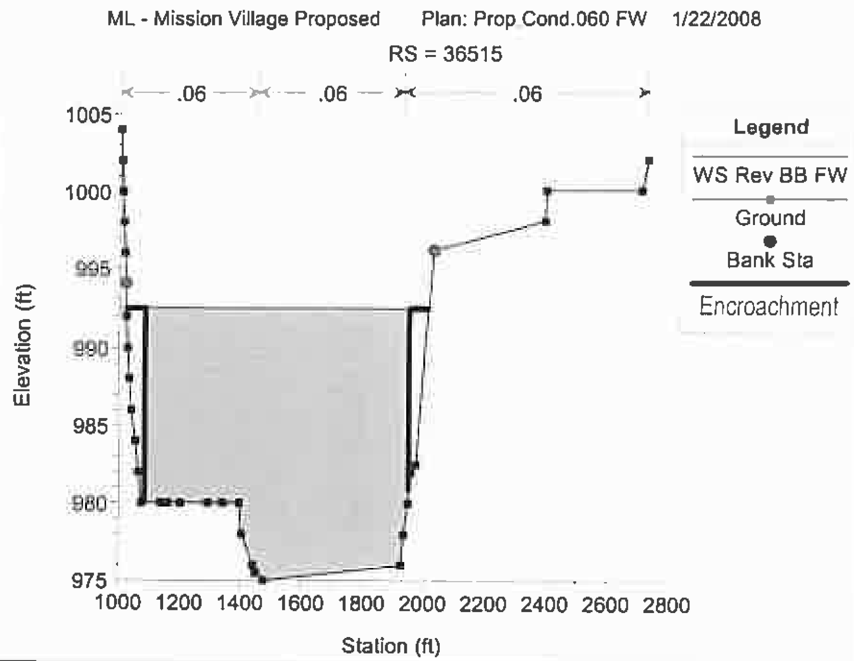
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36515
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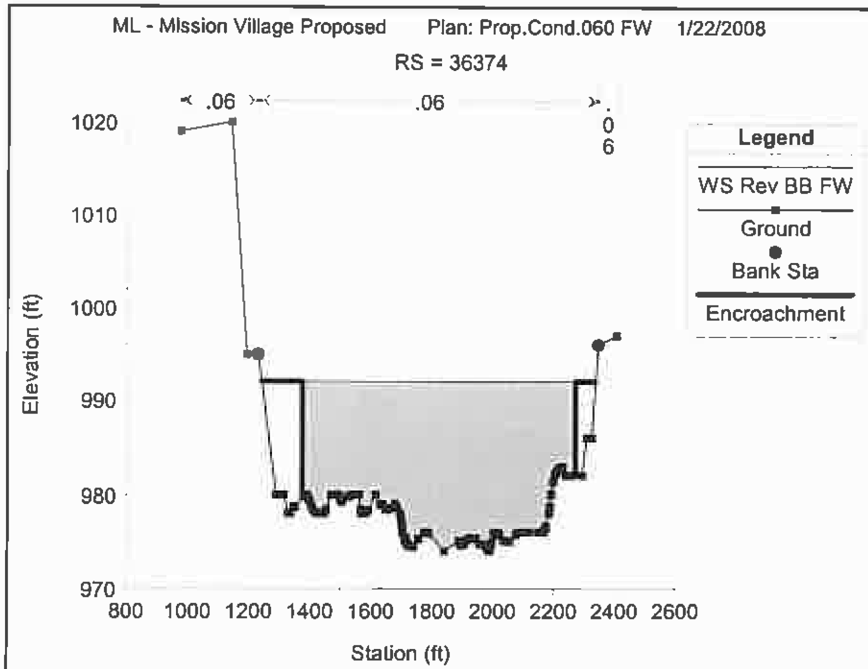
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36374
.06
.06
0
6
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1010
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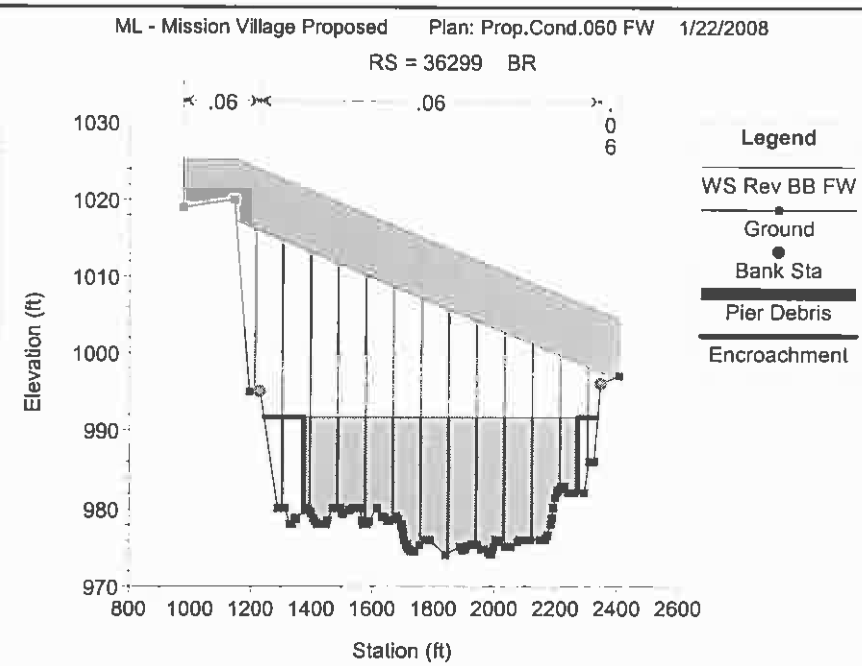
990
980
970
800 1000 1200 1400 1600 1800 2000 2200 2400 2600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RS = 36299 BR
.06
.06
0
6
Legend
WS Rev BB FW
Ground
Bank Sta
Pier Debris
Encroachment
Elevation (ft)
Station (ft)
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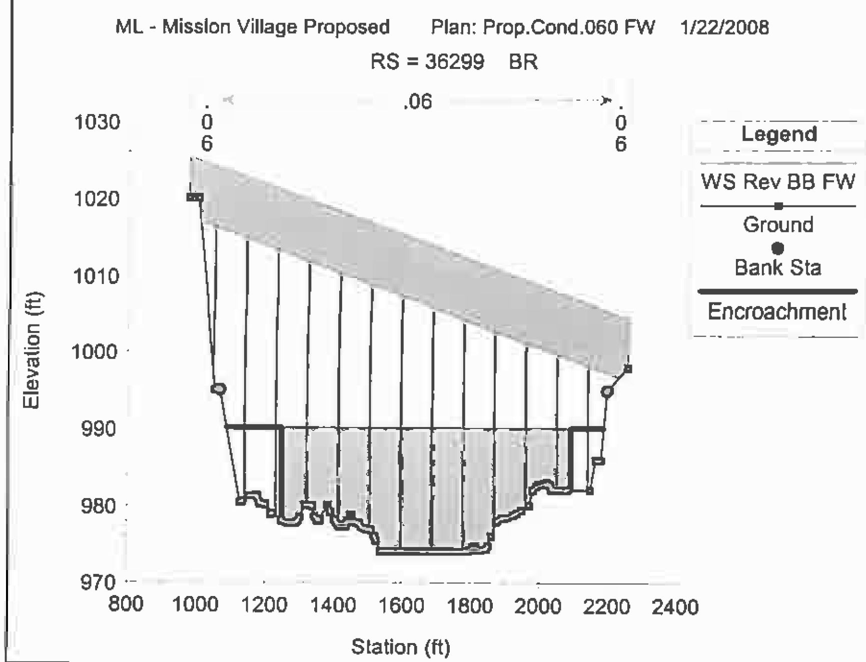
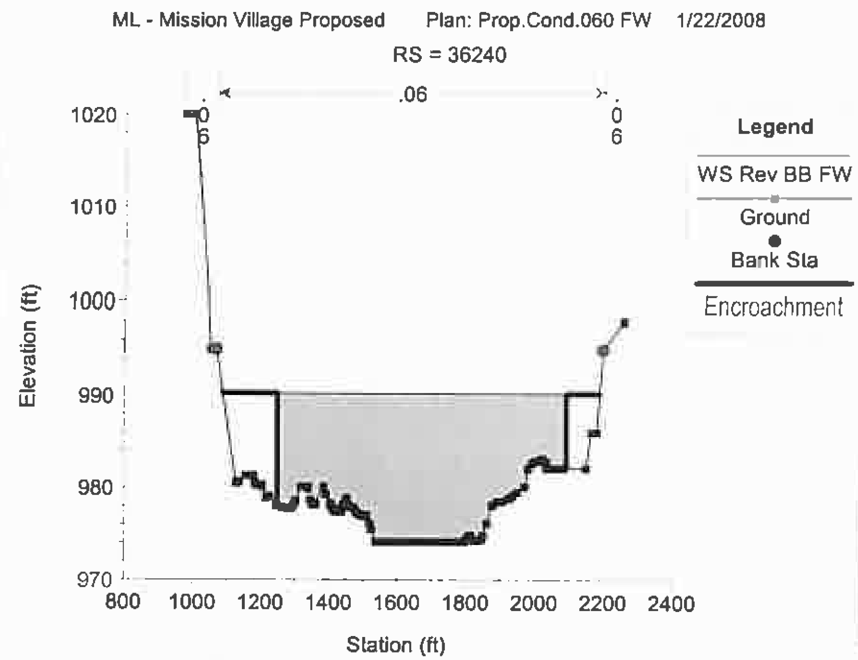
1020
1010
1000
990
980
970
800 1000 1200 1400 1600 1800 2000 2200 2400 2600


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36299 BR
.06
0
6
0
6
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
980
970
800 1000 1200 1400 1600 1800 2000 2200 2400


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36240
.06
0
6
0
6
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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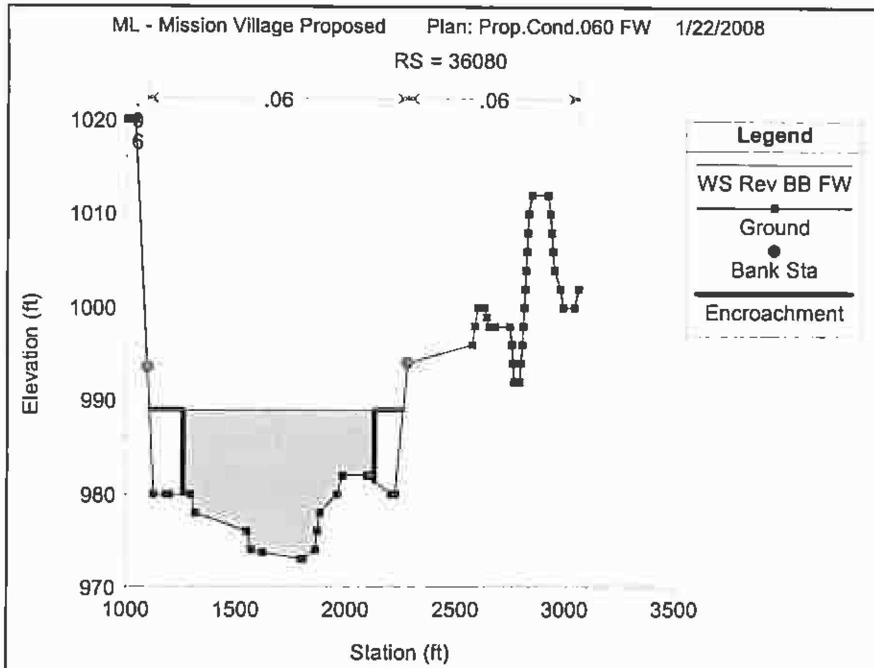
990
980
970
800 1000 1200 1400 1600 1800 2000 2200 2400



ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 36080
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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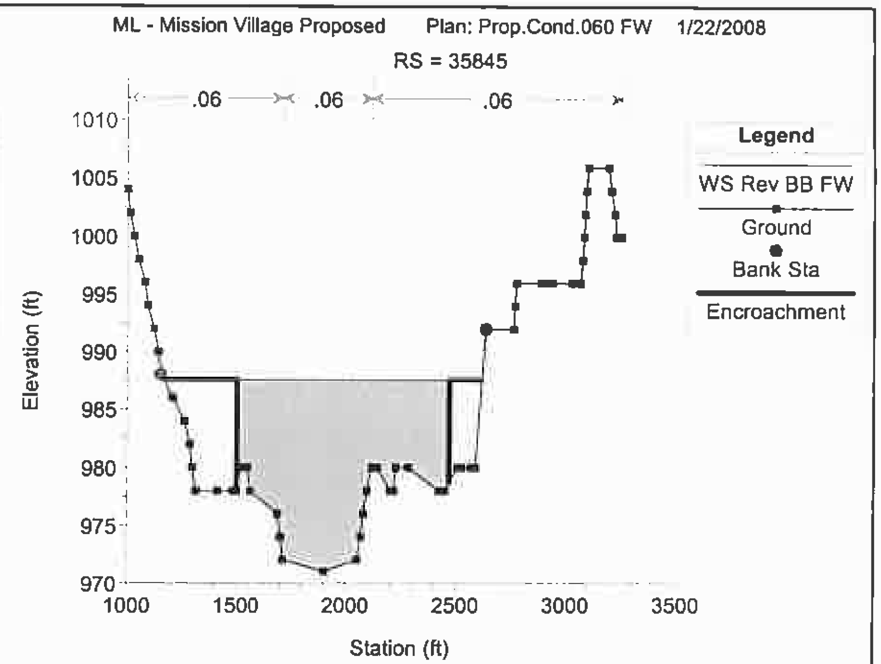
1000
990
980
970
1000
1500
2000
2500
3000
3500



ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 35845
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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1000
995
990
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970
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1500
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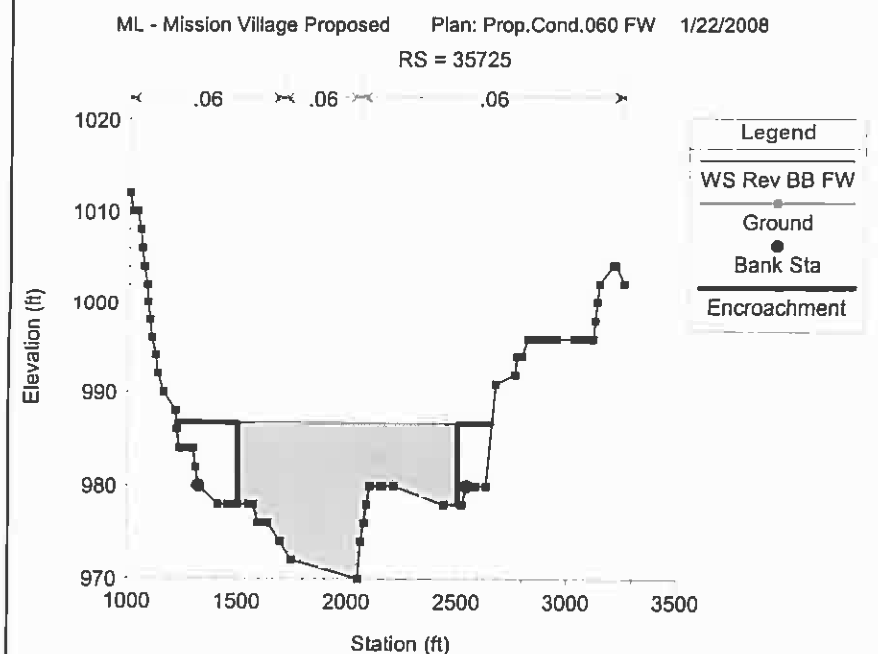

ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 35725
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.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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1010
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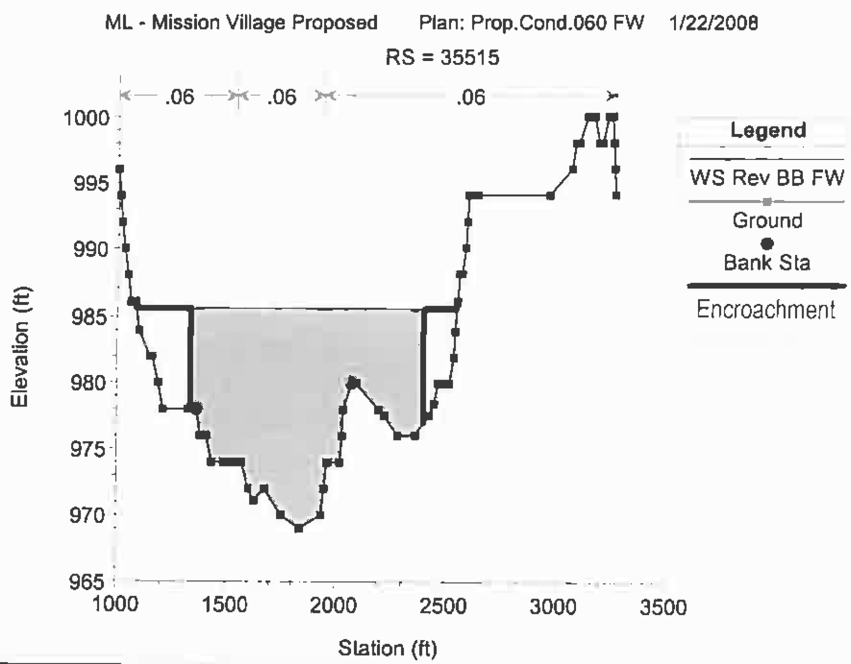
980
970
1000
1500
2000
2500
3000
3500



ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 35515
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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995
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985
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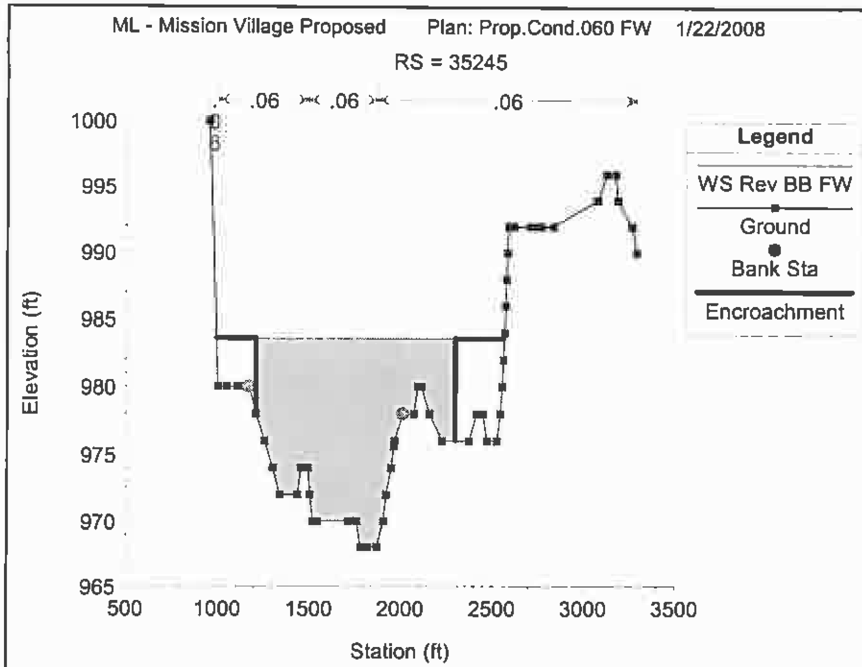
975
970
965
1000
1500
2000
2500
3000
3500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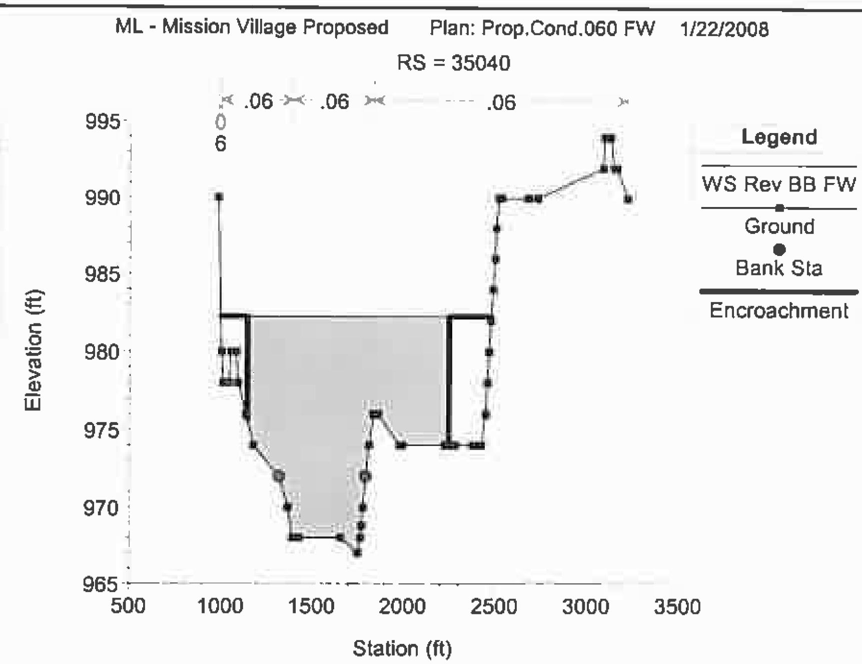
.06 .06 .06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment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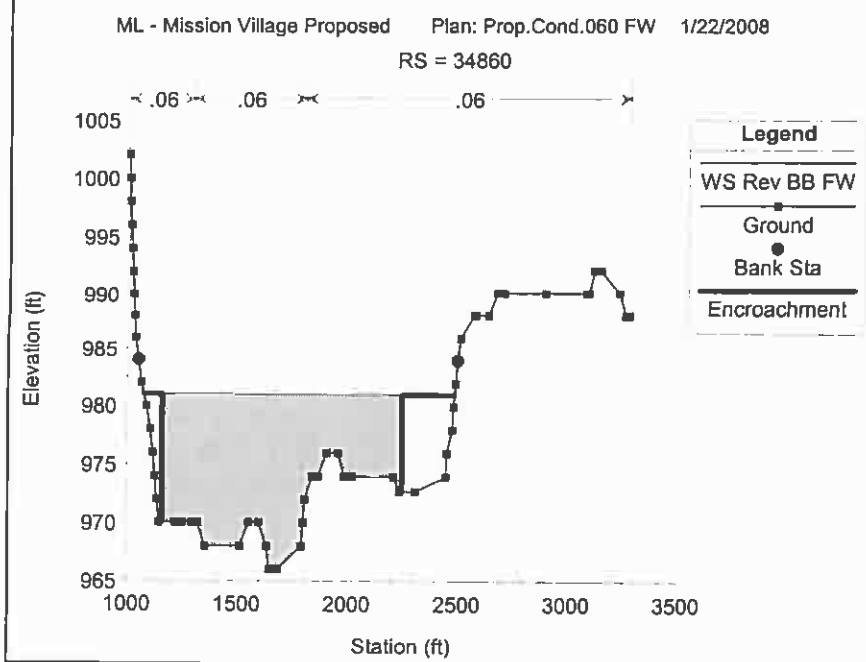
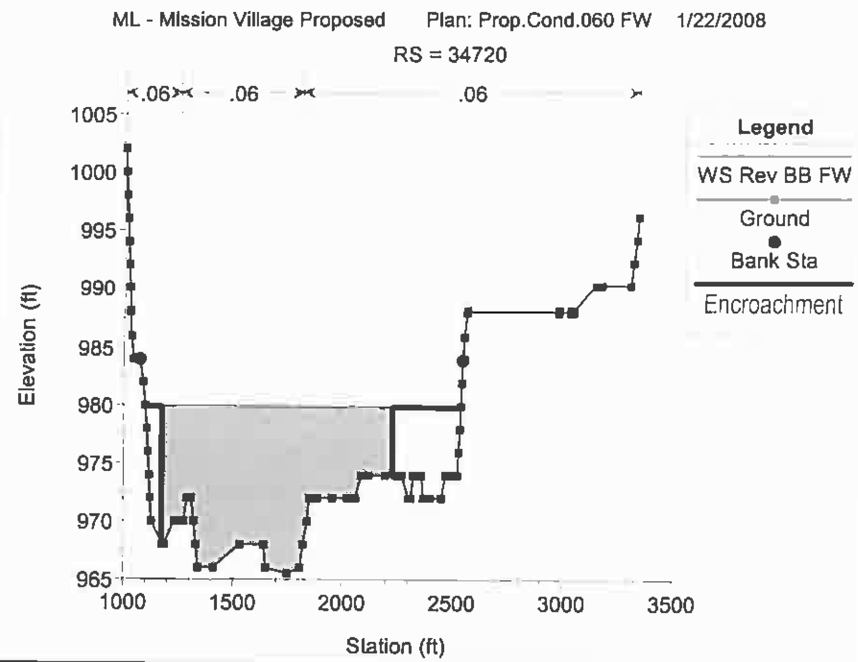
.06 .06 .06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 34860
.06 .06 .06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
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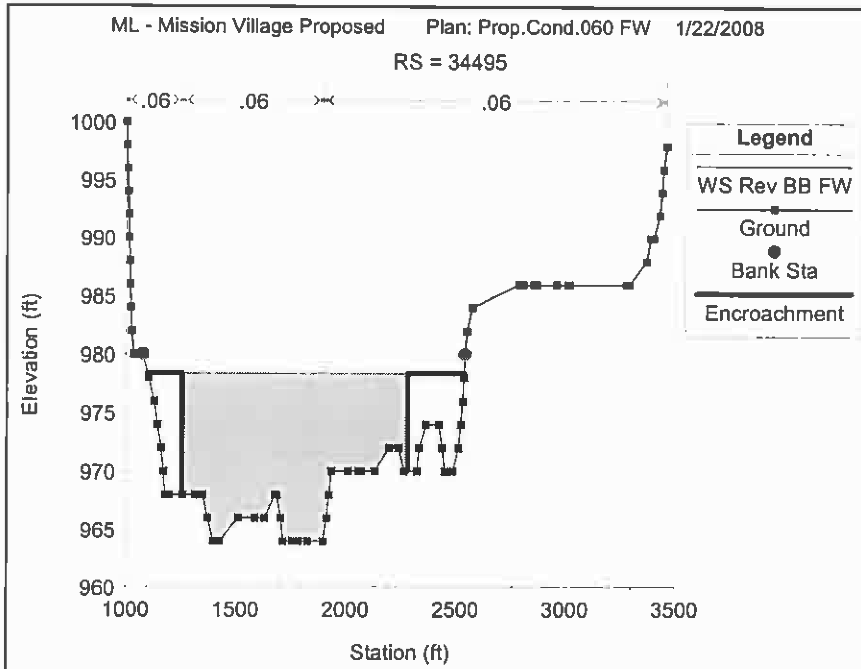
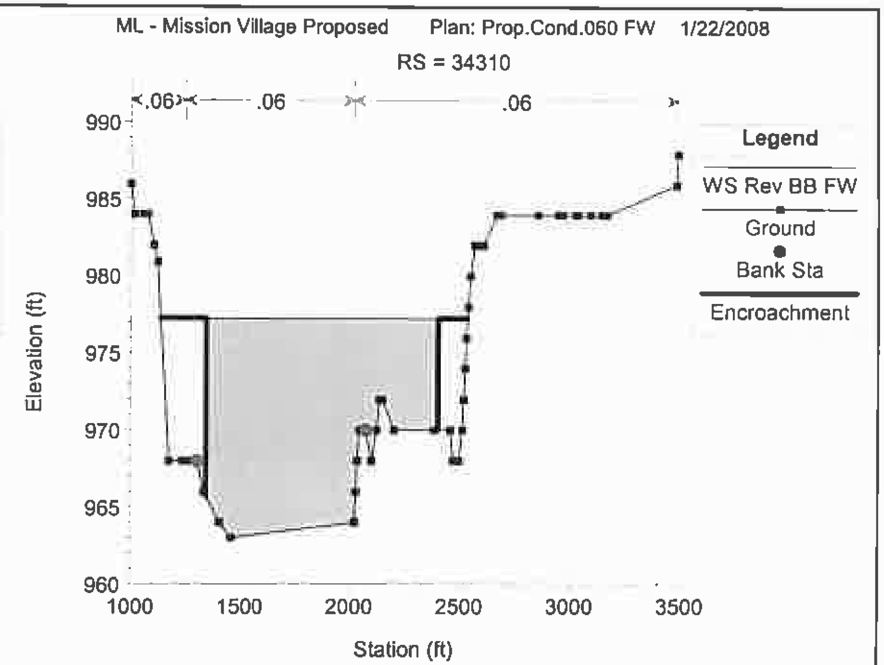
.06 .06 .06
Elevation (ft)
Station (ft)
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 34495
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
1000
995
990
985
980
975
970
965
960
1000 1500 2000 2500 3000 3500
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 34310
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.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
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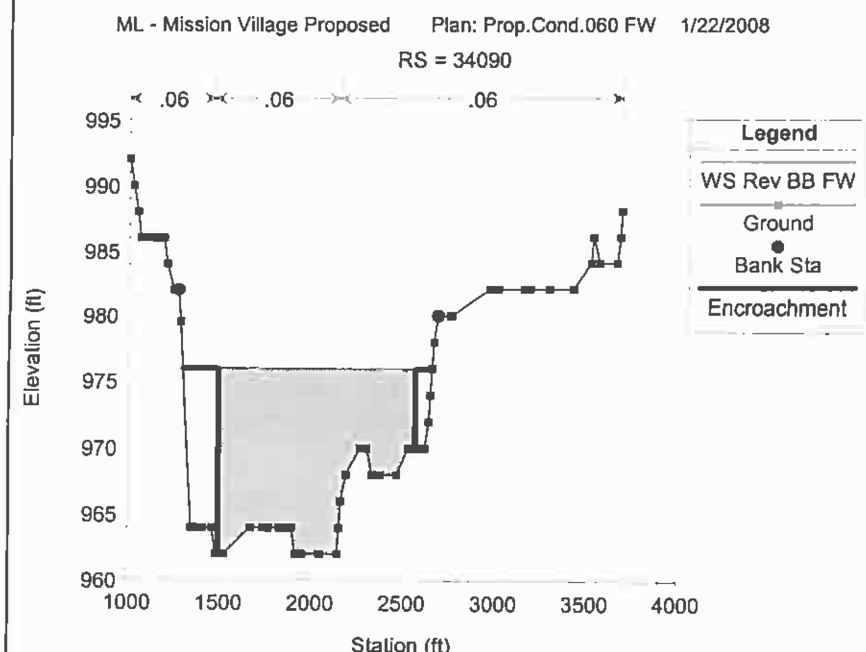
985
980
975
970
965
960
1000 1500 2000 2500 3000 3500
Station (ft)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RS = 34090
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
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975
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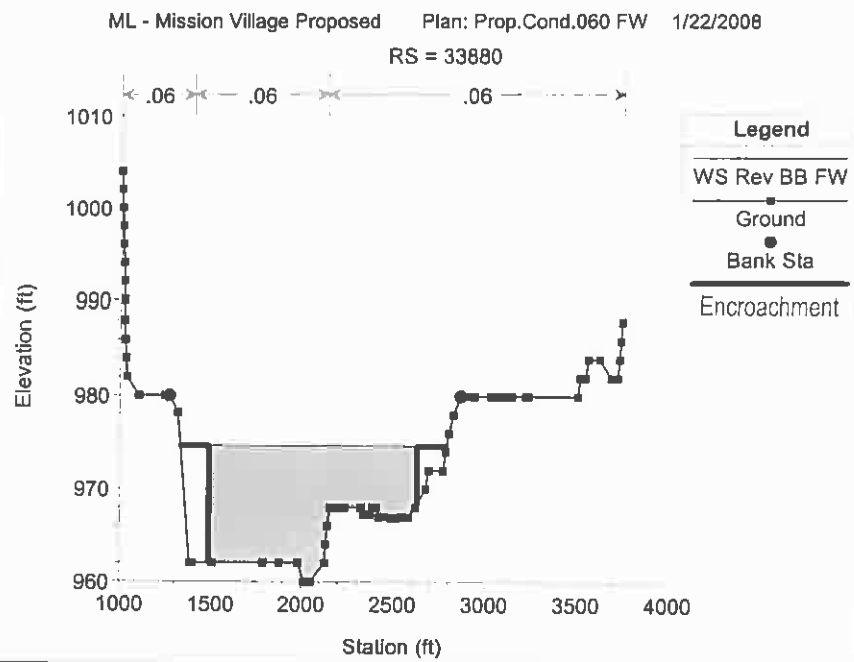
965
960
1000 1500 2000 2500 3000 3500 4000
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 33880
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.06
.06
Legend
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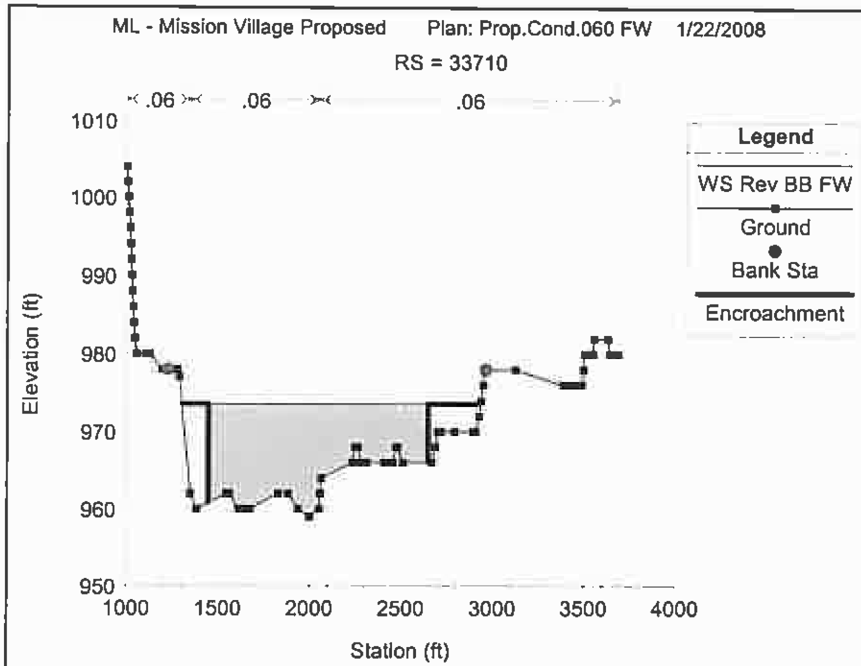
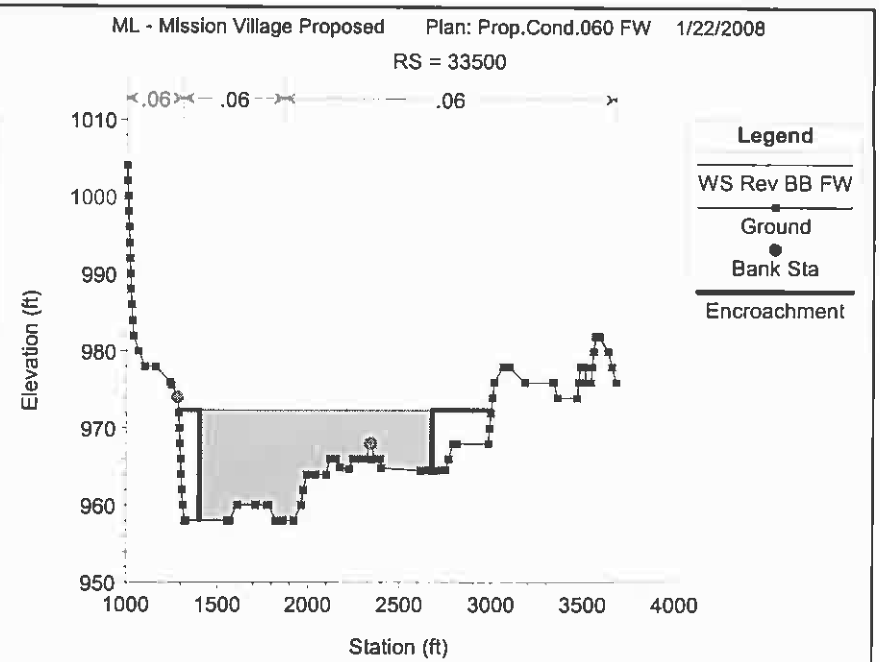
Ground
Bank Sta
Encroachment
Elevation (ft)
1010
1000
990
980
970
960
1000 1500 2000 2500 3000 3500 4000
Station (ft)


ML - Mission Village Proposed Plan: Prop.Cond.060 FW 1/22/2008
RS = 33710
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1010
1000
990
980
970
960
950
1000
1500
2000
2500
3000
3500
4000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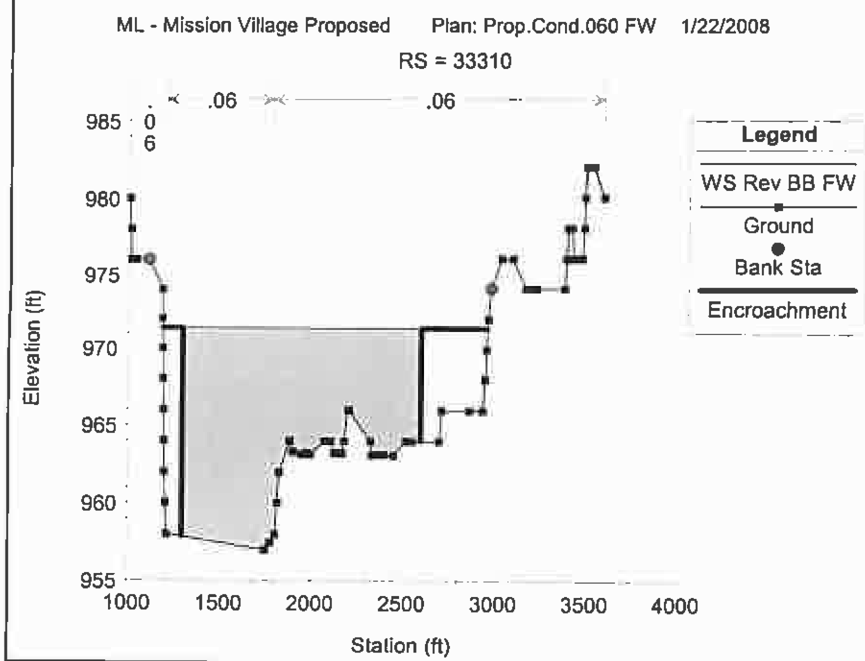
.06
.06
.06
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1010
1000
990
980
970
960
950
1000
1500
2000
2500
3000
3500
4000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6
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Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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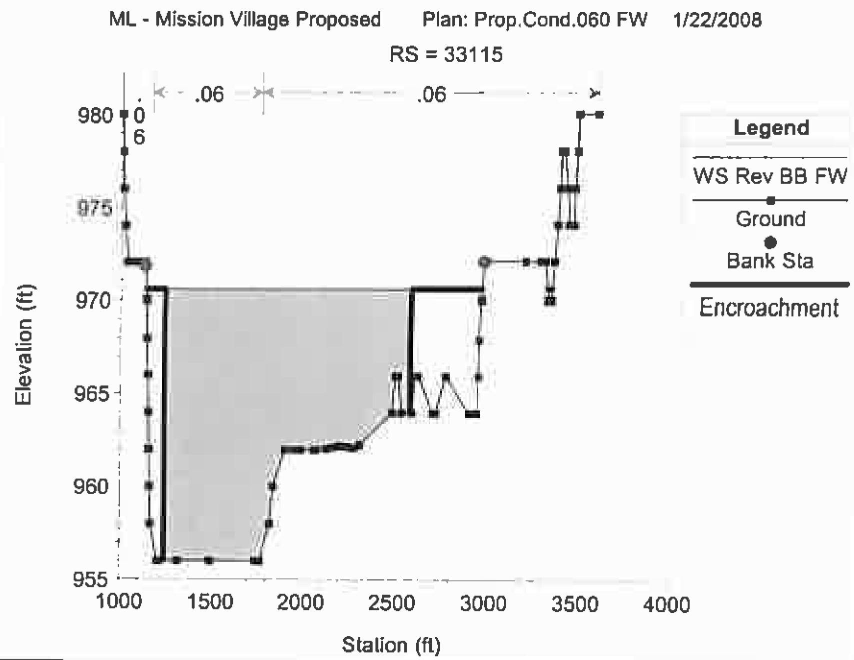
980
975
970
965
960
955
1000
1500
2000
2500
3000
3500
4000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0
6
Legend
WS Rev BB FW
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
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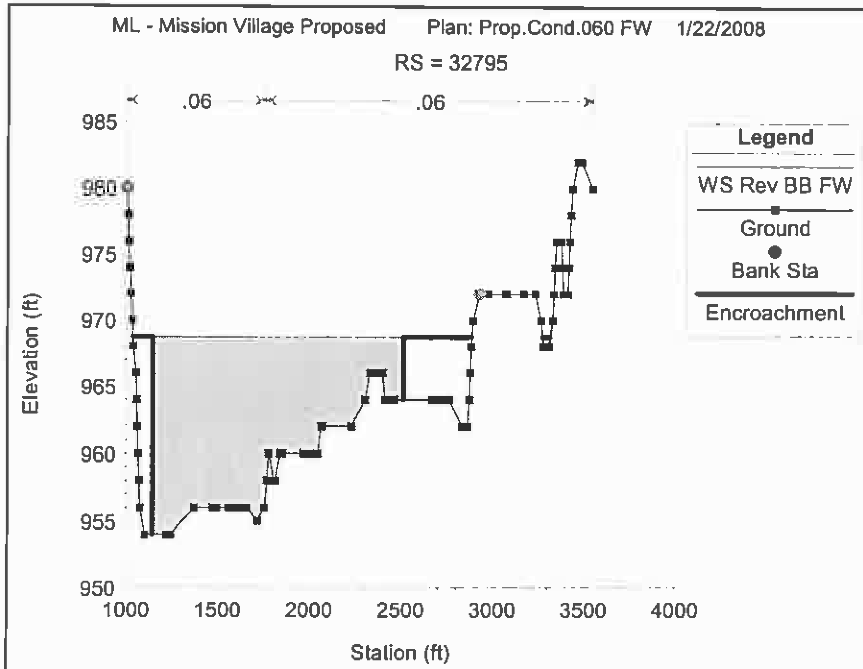
975
970
965
960
955
1000
1500
2000
2500
3000
3500
4000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.06
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Ground
Bank Sta
Encroachment
Elevation (ft)
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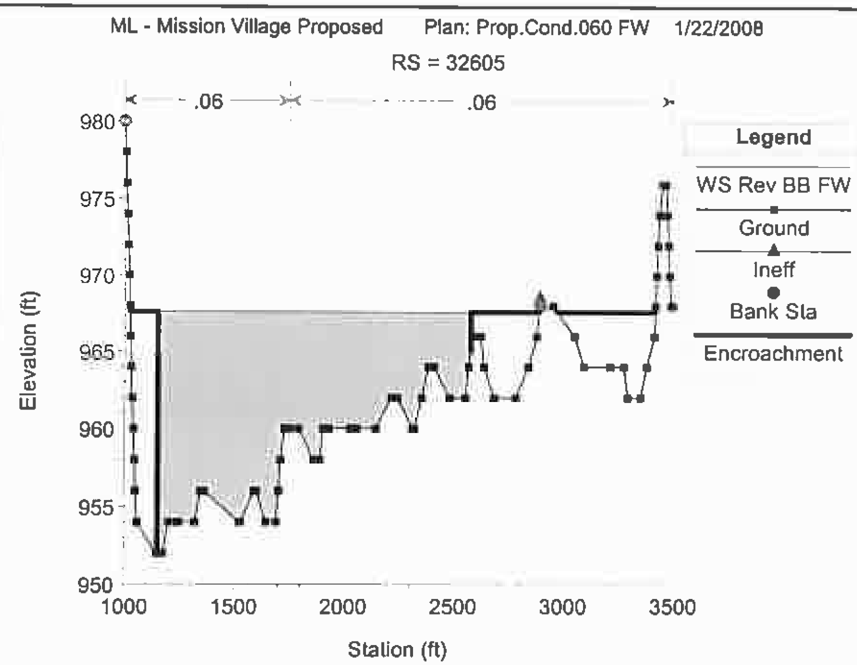
975
970
965
960
955
950
1000
1500
2000
2500
3000
3500
4000
Station (ft)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.06
Legend
WS Rev BB FW
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
980
975
970
965
960
955
950
1000
1500
2000
2500
3000
3500
Station (ft)

Appendix D

PACE

Appendix D

Newhall Ranch Drainage Concept Report for Mission Village TTM #61105, July 2006

Mission Village VTTM # 61105

Drainage Concept Report for Mission Village Santa Clara River Bank Protection

July 2006

Prepared For:

NEWHALL LAND
A LENNAR/LNR COMPANY

Submitted To:

Los Angeles County Department of Public Works

Prepared By:

PACE

Pacific Advanced Civil Engineering, Inc. (PACE)
17520 Newhope Street, Suite 200
Fountain Valley, CA 92708
(714) 481-7300

REGISTERED PROFESSIONAL ENGINEER
MARK EDWARD KREBS
No. 049292
Exp. 09-30-06
CIVIL
STATE OF CALIFORNIA

Contact Person:
Mark Krebs, P.E.
Veljka Burazer

PACE JN 8611E

Appendix E

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

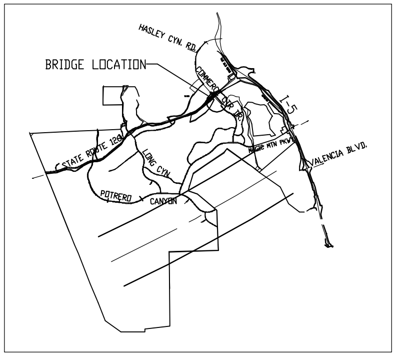
LOCATION, SPAN & CLEARANCE

FOR

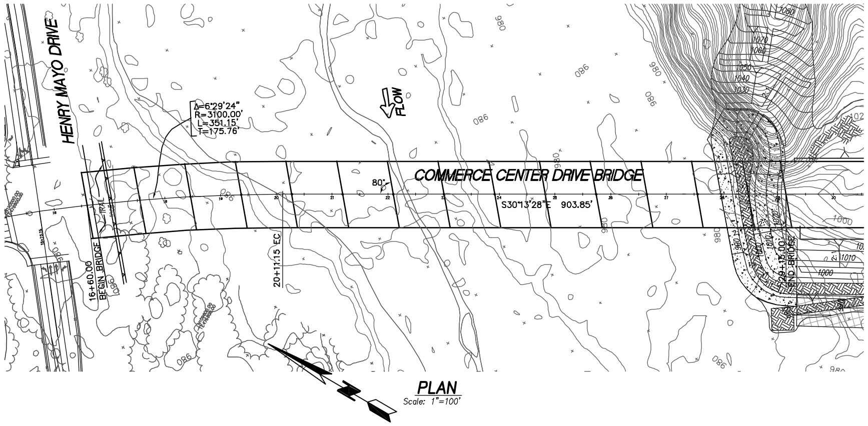
COMMERCE CENTER DRIVE BRIDGE

OVER

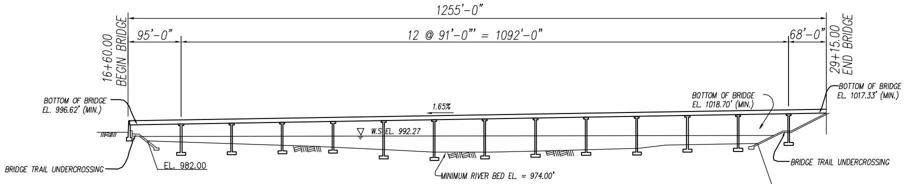
SANTA CLARA RIVER



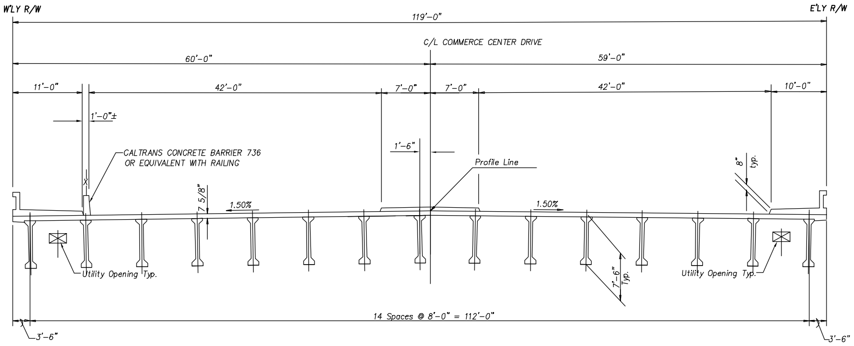
PROJECT LOCATION
No Scale



PLAN
Scale: 1"=100'



SECTION A–A
Scale: 1"=100'



SECTION B–B
Scale: 1"=8'

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15230 BURBANK BLVD., VAN NUYS, CALIFORNIA (818)787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY:	COMMERCE CENTER DRIVE BRIDGE OVER SANTA CLARA RIVER
DRAWN BY:	LOCATION, SPAN & CLEARANCE
PROJECT ENGINEER:	SUBMITTED: DIVISION ENGINEER DATE APPROVED: H. W. STONE DIRECTOR OF PUBLIC WORKS BY: DEPUTY DIRECTOR DATE BRIDGE NO.: PROJECT NO.: SHT.: 1 OF: 1 DWG. NO.:

REVISIONS

CHECKED

DRAWN